EXPERT ADVICE AND TIPS FOR EVERY AMIGA ENTHUSIAST

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AMIGA SHOPPER

From the makers of AMIGA FORMAT

ISSUE 26 ● JUNE 1993 ● £1.50
YOUR DEFINITIVE AMIGA GUIDE

The Amiga exposed



We show you precisely how your Amiga ticks

INSIDE

AMIGA ANSWERS

Our expert panel tackles all your Amiga-related problems, whether they be hardware or software, basic or advanced.

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AMIGA SHOPPER
AT A GLANCE GUIDE

To help you find what you want quickly and easily, here is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 29. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

Amiga Shopper,
30 Monmouth Street,
Bath BA1 2BW.

WELCOME

Hot news from Commodore is what we promised last month, and that's what we've got for you. Not only are we carrying a report on the latest in the Amiga range – the A4000 030 – on page 11, but also an uncomfirmed but well-sourced story on an exciting CD-based Amiga console rumoured to be scheduled for a Christmas launch. See page 10 for the details.

So how many of you want to know how your Amiga works – not just how to switch it on and off and stuff in disks, but *exactly* what's going on inside it? Well, starting on page 20 is a new series that aims to tell you just that. And believe me, it's damned useful information – once you know how your Amiga ticks at a fundamental level, you'll find that everything you learn about higher level concepts – bitmaps, structured drawings, sound samples, disk drives, whatever – will make so much more sense. You really *can* become an Amiga expert.

This month sees the start of a new section: Window Shopper. It's here that we take a look at all those miscellaneous products that, while not being important enough to warrant several pages on their own, are nevertheless worth evaluating. So, if you're after a new screen filter or a disk-based AmigaDOS tutorial, turn to page 86.



That's not the only change we've made – it's goodbye to Dave Green and Diana Taylor, who are off to pastures new, and hello to Alex Soboslay and Mark Nottley. Alex takes over as production editor, while Mark is our new art editor. You can be assured that, with their aid, future issues are going to be even better than before.

Enjoy this one!

Cliff Ramshaw

PUBLIC DOMAIN WORLD

SOFTWARE FOR NOWT

Did you know there are thousands of Amiga programs which are available for little more than the price of a disk, and many more that you can try out before you buy? In Public Domain World we take a look at the best of these programs and show you how easy it is to get hold of them.

Taking pride of place in this month's round-up is *E*, a brand new programming language from Wouter van Oortmerssen. It's fast, powerful, and it's free! Public Domain World or

E – by gum!

as we call it this month, starts on page 104

AMIGA ANSWERS

12 PAGES DEVOTED EXCLUSIVELY TO ANSWERING YOUR QUESTIONS

Our panel, comprising experts from each of the major fields of Amiga computing, is the answer to your prayers. Every month it solves more genuine reader problems than any other Amiga magazine. And in the Code Clinic all your programming errors are explained and corrected as well!

We answer questions every month on Workbench • The CLI • Comms • Programming • DTP • Video • Business software • And more!

THE ANSWERS START ON PAGE 29

FOR A FULL LIST OF CONTENTS, TURN THE PAGE

Your guarantee of value

This magazine comes from Future Publishing, a company founded just seven years ago, but which now sells more computer magazines than any other publisher in Britain: We offer:

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The home of Britain's finest computer magazines: Amiga Shopper • Amiga Format • Amiga Power • Commodore Format • PCW Plus • PC Plus ST Format • Your Sinclair • Sega Power Amstrad Action • PC Answers • PC Format Total! • Super Play • Mega • Gamesmaster – and masses more coming at ya in 93 too

The BBC Radio 1's TV and Radio Presenter

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Jakki Brambles Column

HI ,I'm Jakki Brambles and from thi month on I'll be writing this column exclusively for INDI.

So knowing that all you folks are Com modore fanatics, I will be aiming t provide you with the best inside infor mation on what's new in the Commo dore world together with the latest hint and tips.

Since agreeing to write for INDI, I hav been amazed at how big the Commo dore market place is. INDI tell me tha their sales desk has been swampe with orders for their Amiga 1200 har disk offers.

Not surprising, when you consider tha they are offering a product officiall covered by Commodore maintenanc through Wang UK.

Of course, you can buy a non standar Amiga with a dealers own warranty bu thenCommodore do not give their approval with out a great deal of though I know what I'dprefer to buy.

Congratulations to David Pleasance o his appointment as General Manage at Commodore as he takes the hel from Kelly Sumner. David has been a Commodore for many years and ha most recently been responsible for th developement of their business in th States.

Commodore tell me that the A120 Comic Relief Pack has been a rea success, thanks to all you generou Sleepwalker fans. Don't forget Com modore donate £10 on your behalf t the Comic Relief Fund for every Pac sold.

By now you will all know about the ne Amiga 4000/030 and it's amazing ca pabilities but more about that nex month, especially If I can get my hand on one before they are all gone!

What I need now is loads of feedbac from you. Tell me about your Amiga an if you have any tips that may hel others or problems that I can pas on.The best letter will be printed and th winner will receive a suitably excessiv prize. All letters to *Jakki Brambles Co umn C/o INDI Direct Mail, 1 Ringwa Ind. Estate, Eastern Ave. Lichfiel Staffs, Ws13 7SF.*

See You Next Month.
Kind Regards

Jakki Brambles

INSIDE THIS ISSUE

AMIGA SHOPPER

Issue 26 June 1993

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It's show time! And the prize up for grabs is 12 free issues of your favourite Amiga magazine (that's this one, smartarse). Tell us who wrote the book *Soul of A New Machine*, pop your answer on a postcard and send it to "This has nothing to do with TS Eliot", *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. First correct answer out of the bag wins. Last month's answer: the first author ever to submit a typewritten manuscript was Mark Twain. The winner: Peter Pointon of Walsall.

TERMS AVAILABLE OVER 6, 12, 18, 24 & 36 MONTHS SUBJECT TO STATUS. WHY NOT RING FOR A QUOTE. SAMEDAY RESPONSE. (SEE EXAMPLE)

Panasonic *Quiet* Colour Printing

We researched the colour printer market at great depth to find a colour printer good enough to cope with Amiga's powerful graphic output, yet at an affordable price.
We found the perfect printer in the KX-P2180 + KX-P2123 quiet printers.
We then considered that if you were going to buy a Panasonic printer you would probably need a quality word processing package to use with it. We found that too, with ' Wordworth', yet at a retail price of £129.99 we thought that might be a little too expensive on top of your printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every Panasonic printer. How's that for added value?

Panasonic KX-P2180



***WORDWORTH COMPLETELY FREE! WITH PANASONIC QUIET PRINTERS** The writers choice. The ultimate word processor for AMIGA computers. Wordworth is undoubtedly the ultimate word/ document processor for the full range of AMIGA computers. The graphical nature of WORDWORTH makes producing documents faster and easier, with the enhanced printing fonts (including full Panasonic KX P2180 + KX P2123 colour printing support), Collins spell checker and thesaurus, no other word processor comes close. "Without doubt this is one of the best document processors for the AMIGA, Today"(Amiga Format)
NORMAL RRP £129.99 inc VAT

INDI PRICE £199.99

The new Panasonic KX - P2180 9 pin quiet colour printer. Produces crisp clear text in mono or in 7 glorious colours with new quiet technology. The new KX - P2180 is typically 15dBA quiet er in operation, than the competition.

- **Fast Printing Speeds** 192CPS Draft and 38 CPS NLQ
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta and black)
- **Quiet Printing** Super quiet 45 - 48dBA sound level (most matrix printers are typically in excess of 60dBA)
- **6 Resident Fonts** Over 6,100 type styles using Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts
- **3 Paper Paths** Paper handling from bottom, top and rear for total flexibility
- **1 Year warranty** for total peace of mind.

Panasonic KX- P2123



INDI PRICE £239.99

The new high performance Panasonic KX - 2123 24 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price.

- **Fast Printing Speeds** 192 CPS draft, 64 CPS LQ and 32 SLQ.
- **Colour Printing** 7 colour palette (blue, red, green, yellow, violet, magenta and black)
- **Quiet Printing** Super quiet 43.5 - 46kBA sound level (most matrix printers are in excess of 60dBA)
- **7 Resident Fonts** Over 152,000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script, and Sans Serif Fonts
- **24 PIN Diamond Printhead** High performance and high quality output
- **1 Year Warranty** for total peace of mind.

Panasonic LASER PRINTER

KXP - 4410 LASER PRINTER





WORDWORTH COMPLETELY FREE! WITH PANASONIC LASER PRINTERS The writers' choice. The ultimate word processor for AMIGA computers. NORMAL RRP £129.99 inc. VAT

KXP - 4430 LASER PRINTER



Once again INDI have joined together with Panasonic to offer all Amiga owners the most outstanding Laser Printer offer ever. We are now able to offer high quality, professional laser printing at affordable prices. We are also giving away a free copy of Wordworth with every Panasonic Laser Printer purchased (RRP £129.99). Whether you are looking for a laser printer to handle word processing, DTP, presentation or complex graphic applications - the Panasonic range offers you the power to meet your requirements.

KXP - 4410

- 5 pages per minute
- 28 resident fonts
- Optional 2nd input bin (total printer capacity 2 x 200 sheets)
- Low running costs
- Parallel interface
- Optional memory expansion to 4.5 Mb (0.5 Mb as standard)
- HP laserjet II Emulation

INDI PRICE £499.99 inc. VAT

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic 2 YEAR ON-SITE WARRANTY

KXP - 4430

- Satinprint (optimum resolution technology)*
- 5 pages per minute
- HP Laserjet III Emulation, PCL 5
- 8 Scalable fonts & 28 bitmap functions
- Optional 2nd input bin (total printer capacity 2 x 200 sheets)
- Optional memory expansion to 5.0 Mb (1 Mb as standard)

INDI PRICE £699.99 inc. VAT

*(Satinprinters use optimum resolution technology to produce truly outstanding print quality.This software technique smooths away traditional jagged edges on curved characters and lines by varying the printed dot size and position).

WORDWORTH COMPLETELY FREE WITH LASER PRINTERS

Panasonic PRINTER ACCESSORIES



1) PANASONIC AUTOMATIC SHEET FEEDER
Automatic Sheet Feeder for KXP 2180/ KXP 2123 holds 80 A4 sheets. **INDI PRICE £89.99**

2) PRINTER DUST COVER
Specially tailored quality dust cover for Panasonic KXP 2180/ KXP2123 printer. **INDI PRICE £8.99**

3) PRINTER STAND
2 piece printer stand. **INDI PRICE £9.99**

4) PAPER PACK
500 sheets quality A4 paper. **INDI PRICE £9.99**

5) CONTINUOUS PAPER
2000 sheets 1 part listing paper. **INDI PRICE £19.99**

6) PARALLEL PRINTER CABLE
To be used when connecting Amiga to Panasonic Printers. **INDI PRICE £8.99** (£5.99 if purchased with a printer)

7) PANASONIC COLOUR RIBBON
Colour ribbon for KXP 2180/ KXP 2123. **INDI PRICE £18.99**

8) PANASONIC BLACK RIBBON
Black ribbon for KXP 2180/ KXP 2123. **INDI PRICE £9.99**

SAVE ££££'s ON THE FOLLOWING ACCESSORY PACKS

PACK 1
PANASONIC COLOUR RIBBON PACK
Contains 6 colour ribbons for the KXP 2180/ KXP2123 RRP £119.99. **INDI PRICE £89.99** SAVE £30.00!!!

PACK 2
PANASONIC RIBBON PACK
Contains 2 black and 4 colour ribbons for KXP 2180/ KXP 2123. RRP £99.99. **INDI PRICE £69.99** SAVE £30.00!!!

PACK 3
PANASONIC DELUXE ACCESSORY PACK
Contains Automatic Sheet Feeder, 2 black ribbons, 2 colour ribbons, 1 dust cover, 2 piece printer stand. RRP £169.99 **INDI PRICE £139.99** SAVE £30.00!!!

Add £2.50 carriage to all printer accessories or combinations thereof

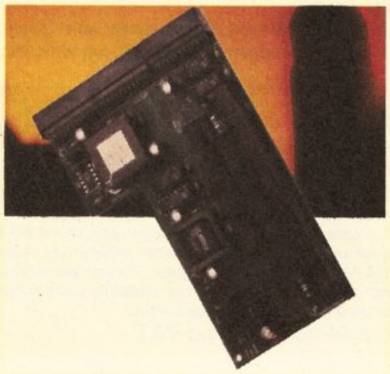
WANT THE BEST IN PROFESSIONAL AMIGA. WHY NOT TAKE ADVANTAGE OF THE CREDIT DEALS AVAILABLE (SUBJECT TO STATUS). CREDIT AVAILABLE ON 6, 12, 18, 24, 36 MONTHS. WHY NOT RING NOW FOR A QUOTE. SAME DAY RESPONSE.

AMIGA RECOMMENDED PERIPHERALS & ACCESSORIES

New from Microbotics for the A1200!!!. M1230XA Accelerator launch!!

Microbotics beats the competition on price, performance, features and configurations.INDI is very pleased to announce the availability of the new 68030 accelerator product for the A1200: the microbotics M1230 XA (call it the "XA" for short) 50 MHZ speed is standard! Memory management is standard! Huge 128 MB memory design is standard (the biggest memory space on any A1200 peripheral) Just look at these specifications and prices!

M1230 XA W/40 MHZ EC 030 OMB INDI PRICE £299.99
M1230 XA W/40 MHZ EC 030 4MB INDI PRICE £399.99
M1230 XA W/50 MHZ MMU 030 OMB INDI PRICE £399.99
M1230 XA W/50 MHZ MMU 030 4MB INDI PRICE £499.99



MBX1200.

The original and the best floating point unit and memory uppgrade for the Amiga A1200. Available with 0,4 0R 8 MB OF 32 BIT FAST RAM and a choice of floating point units. Now complete with re time clock (RTC)

MBX1200Z 68881 14 MHZ 0MB INDI PRICE £129.99
MBX1200Z 68881 14MHZ 4MB INDI PRICE £249.99
MBX1200Z 68881 14 MHZ 8MB INDI PRICE £349.99
MBX1200Z 68882 25 MHZ 0MB INDI PRICE £189.99
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MBX1200Z 68882 25 MHZ 8MB INDI PRICE £409.99
MBX1200Z 68882 50 MHZ 0 MB INDI PRICE£339.99
MBX1200Z 68882 50 MHZ 4MB INDI PRICE £419.99
MBX1200Z 68882 50 MHZ 8MB INDI PRICE £539.99

MEMORY UPGRADES AND ACCESSORIES

M501 The original 0.5MB battery backed upgrade for the A500.
INDI PRICE £29.99

M502 The original 1 MB battery backed upgrade for the A500.
INDI PRICE £49.99

8 Up memory board. Again designed for the A1500/A200. Memory upgradable to 2/ 4 or 8MB
INDI PRICE £69.99

Hard frame/ suitable for A1500/A2000. Allows for the interface of a SCSI hard drive.
INDI PRICE £110.99

AUDIO VISUAL



MEGAMIX. Low cost, hi spec digital effects cartridge plugs into printer port of Amiga. Allows stereo sampling from almost any musical source.
INDI PRICE £29.99



VIDI AMIGA 12. THE ultimate low cost colour digitiser for the Amiga."The best value full colour digitiser on the market" AMIGA FORMAT.
INDI PRICE £75.99



TAKE 2. Animation package is a must for computer artists and enthusiasts of all ages. As used in Rolf Harris Cartoon Club.
INDI PRICE. £37.99



ROCTEC ROCGEN. Entry level Genlock for all Amigas. Record stunning Amiga Graphics onto Standard video or overlay text and graphics onto a video signal.
INDI PRICE £69.99

ROCTEC ROCGEN PLUS. As above but with extra features such as tinting and signal inversion. Allows for real time editing of graphics. Compatible with all Amigas.
INDI PRICE £133.99

ROCTEC ROCKEY. The ultimate accessory for Amiga / video fans. Separate RGB controls to croma key on any colour
INDI PRICE £249.99

PYRAMID SCANNER. A total hand held scanning package for all Amigas complete with interface and software (mono)
INDI PRICE £99.99.

AMIGA PERIPHERALS.



2MB SMARTCARD. The original and still the only fully PCMCIA compatible memory card for A600/A1200. Comes with lifetime guarantee. Beware of cheap imitations
INDI PRICE £129.99

4MB SMARTCARD. Same as above but maximum 4 MB INDI PRICE £199.99



ZAPPO 601. Trapdoor upgrade for the A600. 1MB with RTC
INDI PRICE £49.99

ZAPPO 601NC. As above only 512K no clock. INDI PRICE £29.99



MULTISTART ROMSHARER with kickstart V3. INDI PRICE £44.99

MUTISTART ROMSHARER. with kickstart V2.04 INDI PRICE £49.99

DISK DRIVES.



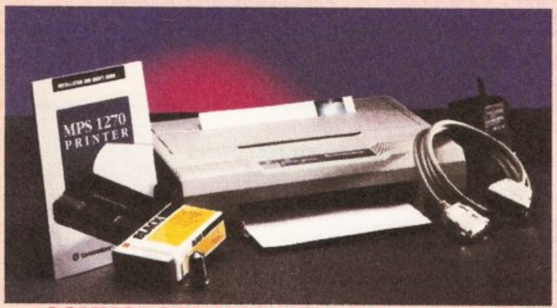
ZAPPO EXTERNAL FLOPPY.
You've seen all the reviews on this popular and affordable second Amiga drive. Compatible with all Amigas. INDI PRICE £59.99
"Quality: 9 out of 10." Exceptional value for money. *AMIGA COMPUTING JAN 93*

MONITORS.



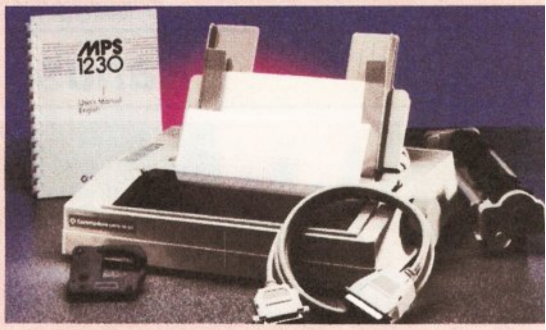
1084ST MONITOR.
Commodoresoriginal and best selling colour stereo monitor. Now includes swivel and tilt stand for total ease of use. INDI PRICE £189.99
(£179.99 If purchased with A600/A1200/A1500)

PRINTERS



COMMODORE MPS 1270A INK JET PRINTER.
Whisper quiet yet prints at an amaziing 160 CPS. Possibly the best value printer on the market.
INDI PRICE £94.99
1270A - REPLACEMENT INK JET CARTRIDGE.
INDI PRICE £12.99

COMMODORE MPS 1230 A high quality 9-pin Dot Matrix Printer with paper and tractor feed and is fully compatible with Epsom FX80 and IBM Industry standards. High speed 120 CPS draft mode and an NLQ mode of 25 CPS.



INDI VALUE ADDED FREE

D-PRINT - Design greetings cards, letters and posters. **AMIGA LOGO**- Educational and programming language. **AMIGA VISION**- Multimedia Authoring system for video, animation, sound, speech, graphics and text.

INDI PRICE £134.99

Commodore to launch hot CD-based Amiga

Down but not out after the poor sales of CDTV, Commodore books its next bout in the CD arena

Commodore is set to release a console-based Amiga with built-in CD capability in time for Christmas, it was announced in *CTW*, the computer industry trade paper. No technical details of the machine have been released, but sources close to Commodore have revealed to *Amiga Shopper* that the new system will include:

- built-in CD drive
- console format with keyboard and 3.5-inch disk drive as plug-in extras
- 68020 processor, as in the A1200
- AGA graphics, as used in the A1200 and A4000
- 2Mb RAM
- backwards compatibility with CDTV software
- all at a price of around £250.

Rumours of a console-based Amiga have been circulating for some time, but concrete news of the machine was not made public until April 5's edition of *CTW*. Kelly Sumner, then Commodore UK's managing director, declined to comment on its existence, although an official announcement is expected to be made within the month.

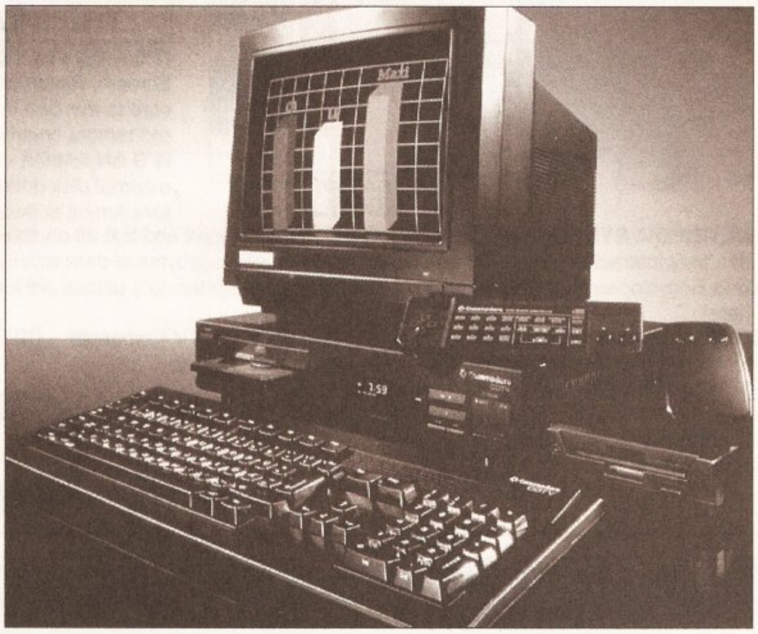
News of the machine follows an announcement made at the developers' conference in Orlando, Florida, that CD publishers' royalty payments to Commodore have increased from 25c to $3 (see *Amiga Shopper* 25). These payments must be made on every CD sold, and are similar in concept to the royalties that cartridge producers give to Sega and Nintendo. These companies sell their consoles at very competitive prices, making most of their profits from software sales. It seems that Commodore is intending to take this strategy on board. Its Amiga CD console, at an incredibly low price of £250, will have a relatively low profit margin that it is unlikely to make the company much money by itself.

The machine's rumoured price of £250 and its technical specification make it a direct competitor to Sega's Mega CD, which has just been launched for £270 (+£130 for the necessary MegaDrive itself). If Commodore can make a significant impact on this market, then its future is assured. Sega only launched its machine at the beginning of April, and in two weeks nearly all of the initial 70,000 units have sold out. (That's more than twice the total number of CDTVs sold.) Look at the panel to see just how the two machines compare.

The launch of the machine isn't just good news for games players. Lew Eggebrecht, head of engineering at Commodore Business Machines, announced at the recent developers' conference in Orlando, and confirmed at the World Of Commodore Show in New York, that Commodore is committed to CD technology. CD-ROM support is to be included in future versions of the operating system, and CD-ROM drives are to be released that will work with existing A4000s and A1200s, as well as future models, which, like the console, may well have CD drives built-in as standard. The new CD drives are said to be similar to but better than those used in CDTV. Improvements include double scan modes and an increase in speed brought about by improved algorithms in software.

Negotiations are currently under way with Kodak to enable Commodore to offer Photo-CD support on new machines. Photo-CD is a system enabling you to take your photographs to developers and have the images put onto CDs, and thereafter view them on a TV screen given the necessary hardware. Given the recent publicity and sales of CD drives for Mac and PC platforms, and the key part CD technology can play in multimedia, an area which Commodore sees as very much its key market, it is essential that Commodore quickly releases CD players for its more powerful machines.

The new wave of CD-ROM products from Commodore signals the end of the road for the ill-fated CDTV. Poor marketing, an initially inflated price and an uninterested market meant that the machine never really stood a chance. The market has now changed, as Sega's Mega CD sales testify. A CD console from Commodore launched before Christmas could make a killing, assuming the company can lure prospective buyers away from the bright lights of Sega's name and convince them the Amiga is best.



Has Commodore learned its lesson after the less than satisfactory performance of CDTV? Perhaps the new Amiga CD will be the answer



The competition: Sega says it has sold the best part of 70,000 MegaCDs in the unit's first two weeks on sale

COMMODORE vs SEGA: THE FORM

	Amiga CD	Mega CD
Processor	68020	68000
Clock speed	14MHz	12MHz
Colours	256 (from 16 million)	64 (from 4096)
Resolutions	320x256 minimum	300x200
Custom graphics hardware	sprites, scrolling, dual-playfield	sprite and background scaling, sprite rotation, full motion video
Sound	4 channels	8 channels
Price	around £250?	£400

Although the Mega CD has more sophisticated sprite control than the Amiga, the Amiga's far greater processing power will more than likely make up for this. In addition, the Amiga is capable of much higher resolutions with far more colours on screen at once. The only other department in which the Mega CD offers stiff competition is sound. The Amiga has long been criticised for its outdated sound facilities, but the truth is that four-channel stereo sound is adequate for the purposes of most games. Taken all in all, the Amiga CD beats Sega's machine hands down. If it comes in at the projected price of £250, Commodore is on to a winner.

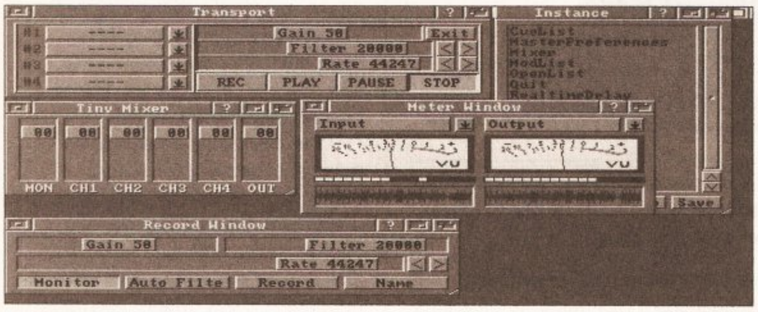
STUDIO 16 REVAMPED

Version 2 of *Studio 16*, the sampling software supplied with SunRize Industries' direct-to-disk sampling hardware, is now available.

Advances to the software include the ability to work with multiple hard disks, the defining and triggering of regions within a sample, a Fast Fourier Transform function, looping, re-sampling, stereo support, and an ARexx port (for external control by other programs), plus an improved interface for the cue list controller.

Studio 16 is sold with both the AD1012 and AD516 packages. The former provides mono sampling at 12-bits resolution in four tracks direct to hard disk. It costs £486.83. The AD516, at a price of £1,350, is aimed very much at the professional. It provides CD-quality sampling in eight tracks with 64 times over-sampling.

Owners of earlier versions of *Studio 16* should contact SunRize Industries on ☎ 0101 408 374 4962 for information about upgrades. The products are distributed in the UK by Digital Marketing International ☎ 0753 686000.



***Studio 16* is the software sold with SunRize Industries' AD1012 and AD516 direct-to-disk samplers. It was already very good; now it's better**

CAD BOUNDS ON

Digital Multimedia Limited's CAD package has been extended to provide compatibility with *AutoCAD*, the leading Computer Aided Design package on the IBM PC.

DML's *XCad 3000* can now read and write *AutoCad's* Date eXchange Format, including that of 3D surface entities. DML's sales and marketing director Richard Nolan enthused: "Now current and prospective Amiga users can take full advantage of the wealth of 3D libraries available to *AutoCAD* and *AutoDesk's* 3D Studio users without having to pay almost £5,000 for the software." Many of these libraries, proliferating because of *AutoCAD's* popularity in the PC world, are public domain.

XCad 3000 costs £386.58. Upgrades for owners of earlier versions are available for a £15 handling charge. Contact your local dealer or distributor Micro-PACE ☎ 0753 551888 for further details. DML ☎ 081 977 1105.

MEDIA MADNESS

Entries are being sought for the 1993 European MultiMedia Awards contest.

The award committee contains representatives from all areas of the industry – hardware and software manufacturers, developers, and production and television companies. It will be giving out prizes in 14 different categories, including: education, entertainment, hardware product, information and reference, point of sale, public display and information, technological innovation, training (personal skills), training (practical skills), best use of audio, best visuals and best interactive design. A Gold Award for Excellence will also be given, along with an award for the "best non-European product".

The winners will receive their trophies at a Royal Lancaster Hotel dinner in London on Wednesday 13 October. Entries must be in by Saturday 31 July. Entry forms are available from European MultiMedia Awards Limited ☎ 061 429 9448.

Blue notes from Scala

Scala's multimedia presentation package has successfully been used in a wide variety of situations. Most recently it was discovered in use, in conjunction with a video wall, at the launch of IBM's OS/2 for multimedia at the CeBIT fair in Hanover. Apparently IBM regularly uses Scala for multimedia presentations at its Minnesota mainframe production facility. Scala ☎ 0920 444294.

Musical fantasia a reality

A whole range of CD-quality sounds are now available to Amiga owners thanks to a new board from US-based company The Blue Ribbon SoundWorks.

The *One-Stop Music Shop* is a board that will plug into an A1500, A2000, A3000 or A4000. It offers 32-voice polyphony in stereo, from a selection of 128 16-bit pre-sets. A wide variety of instruments, orchestral and otherwise, are provided, along with 64 drum maps. More voices can be created via editing software that enables the user to mix samples, perform cross-fades, change sounds' envelopes and delays, and modulate them with sources such as MIDI controllers and low-frequency oscillators.

The board is based on the E-mu Proteus SoundEngine, and features the ASIC signal processing chip. Also included is a MIDI port.

The One-Stop Music Shop can be used by any MIDI-compatible program. It is supported by *Bars & Pipes Professional* and *SuperJAM!*, in which its voices can be used to replace the standard 8-bit ones of the Amiga.

The One-Stop Music Shop costs £569.95 from The Blue Ribbon SoundWorks ☎ 0101 404 315 0212. It is distributed in the UK by Meridian ☎ 081 543 3500.

Bubble pops up from Canon

Canon has squeezed another machine into its portable printer range.

The BJ-10sx, costing £405.38, joins the line-up between the BJ-10ex and the BJ-200. It is a bubblejet printer, providing a faster print speed and a re-designed front panel over the cheaper BJ-10ex. It can also use a larger optional 50-sheet cut paper feeder. Canon's Alan Luck said of the printer: "We foresee that it will enhance the phenomenal success of Canon's BubbleJet printer range."

Canon ☎ 0800 252223.



Canon's new BJ-10sx looks set to be of use to anyone who wants a bubblejet printer that is, er, portable

STOP PRESS STOP PRESS STOP PRESS STOP PRESS

Managing director of Commodore UK Kelly Sumner has resigned.

Sumner has been at the helm of the company for ten months, and an employee of Commodore for more than 13 years. He took over from Steve Franklin, who vacated the position after five years.

Commodore's public relations company Quentin Bell issued a statement saying that Sumner had gone on to "pursue other interests." He has in fact taken up the position of UK managing director for GameTek, a US-based publisher. He told *Amiga Shopper*: "I intend to make GameTek the largest European publisher of leisure software."

Sumner's duties are being divided between two people: David Pleasance as general manager, sales and marketing, and Colin Proudfoot as the new general manager, operations and finance.



Sumner (left) and Franklin – now both ex-MDs of Commodore UK

Mid-level Amiga arrives

Commodore has launched a sub-£1,000 Amiga. Based on the '030 processor, the machine fits neatly into the Amiga range between the A1200 and A4000, and replaces the outdated A2000.

The new Amiga looks exactly the same as the A4000, the only difference being in the processor. Whereas the A4000 uses Motorola's current top-of-the-range 68040 chip, the new A4000 030, as it's called, makes use of the cheaper, slower 68EC030 chip. This is clocked at 25MHz, giving the computer a still very spectacular speed advantage over the A1200.

The "EC" in the processor's name stands for "embedded controller" – a title it bears because the chip was originally designed for use in automatic washing machines and the like. It is the same as the standard 68030 except that it lacks a memory management unit, an omission which will be of concern only to developers using specialist debugging software and users with Unix installed. Although a maths co-processor is not included in the A4000 030, space for one is provided on the plug-in card of the processor itself.

The other area in which it betters the A1200 is that of expansion. It comes with a 24-bit video slot for the addition of extra video hardware such as true colour cards, and four Zorro III slots. These are 32-bit expansion ports, with much higher data transfer rates than their predecessors in the A2000, to which all manner of peripheral cards can be added. Three PC AT slots are also provided.

A price of £999 including VAT will buy you an A4000 030 with 4Mb of RAM – 2Mb of Chip and 2Mb of Fast RAM – and an 80Mb hard disk drive (via an IDE controller). Alternatively, the machine is available with a 120Mb hard disk for £1,099. At these prices, and with the AGA chipset providing up to 256,000 colours on screen, the new Amiga should make a significant impact on the multimedia market place. Or so Commodore hopes, having touted it as "multimedia for the masses" and launched it at a special Multimedia Press Day.



The mid-range Amiga that everyone's been waiting for has finally arrived – the A4000 030, with which Commodore hopes to bring multimedia to the masses

The purpose of the day, as well as launching the machine, was to increase awareness of the Amiga range's capabilities in the multimedia arena. Amiga journalists witnessed an impressive series of demonstrations. Real Time Graphics, a company that specialises in creating computer-generated titles and animations, showed a number of sequences it has made for programs such as *GamesMaster* and *Games World*, and explained why Amigas play such important roles in its productions. The latest version of French program *TVPaint* was demonstrated by a representative of ChartScreen; while a representative from Activa International unveiled the latest version of *Real 3D*. The multi-faceted and highly successful *Scala* was also on display.

The most exciting product was The Blue Ribbon SoundWorks' brand new sound board, *The One Stop Music Shop*, running in concert with the *Bars & Pipes Professional* sequencer (see elsewhere in these news pages for further details).

GET CAUGHT IN THE NET

UK-based company ExNet is offering comms users the chance to gain access to international electronic mail for as little as £5 per month.

The company is offering to connect anyone owning a modem and suitable software to the Internet and USENET. For as little as the cost of your phone calls and £5 per month (plus VAT) for a Basic Service subscription, you can log on to ExNet's network and receive the latest news in the computing world. You can also send and receive electronic mail, and comment to open forums on topics as diverse as politics and science fiction.

The Internet is an electronic network consisting of military, academic, commercial and home computers. Its main backbone resides in the USA, but sites have now spread world-wide, with several hundred in Great Britain. Electronic messages may be transmitted across the Internet to 20 million individual mailboxes.

USENET, on the other hand, is more of an open forum for discussion. Messages are categorised according to subject, with over a thousand different categories to choose from. Over two million people contribute to USENET, from which you can obtain (or give) opinions and advice on just about every conceivable subject.

ExNet also offers more sophisticated levels of service for those with more spending power.

For more information, contact ExNet on ☎ 081 755 0077.

GAMES? WRITE ON!

If you're hoping to make as a professional games programmer, then you might want to take a look at Kuma's *The Commercial Games Programmer's Guide*, written by David Gibbon.

The second edition has just been released for £9.95. In it you'll find tips on programming in the commercial world. You'll be shown how professional programmers organise their code writing, how to develop your ideas, how to deal with copyright, techniques for presenting your games to software houses, and how to market games for yourself.

Kuma Computers ☎ 0734 844335.

Silica sales on

In a move to shift yet more CD-ROM drives, Silica is offering a voucher worth £50 with each CDTV and A570 sold. The vouchers can be used to buy CD-ROM software from Silica. Commented Silica's Andy Leaning: "CDTV and the A570 are really beginning to take off. More and more people are finding out just how good this technology is, compared to other formats currently available. For existing Amiga owners, the A570 rejuvenates their hardware, giving it a new lease of life, with a whole new range of amazing software just waiting to be used. It's like starting out with your Amiga all over again!"

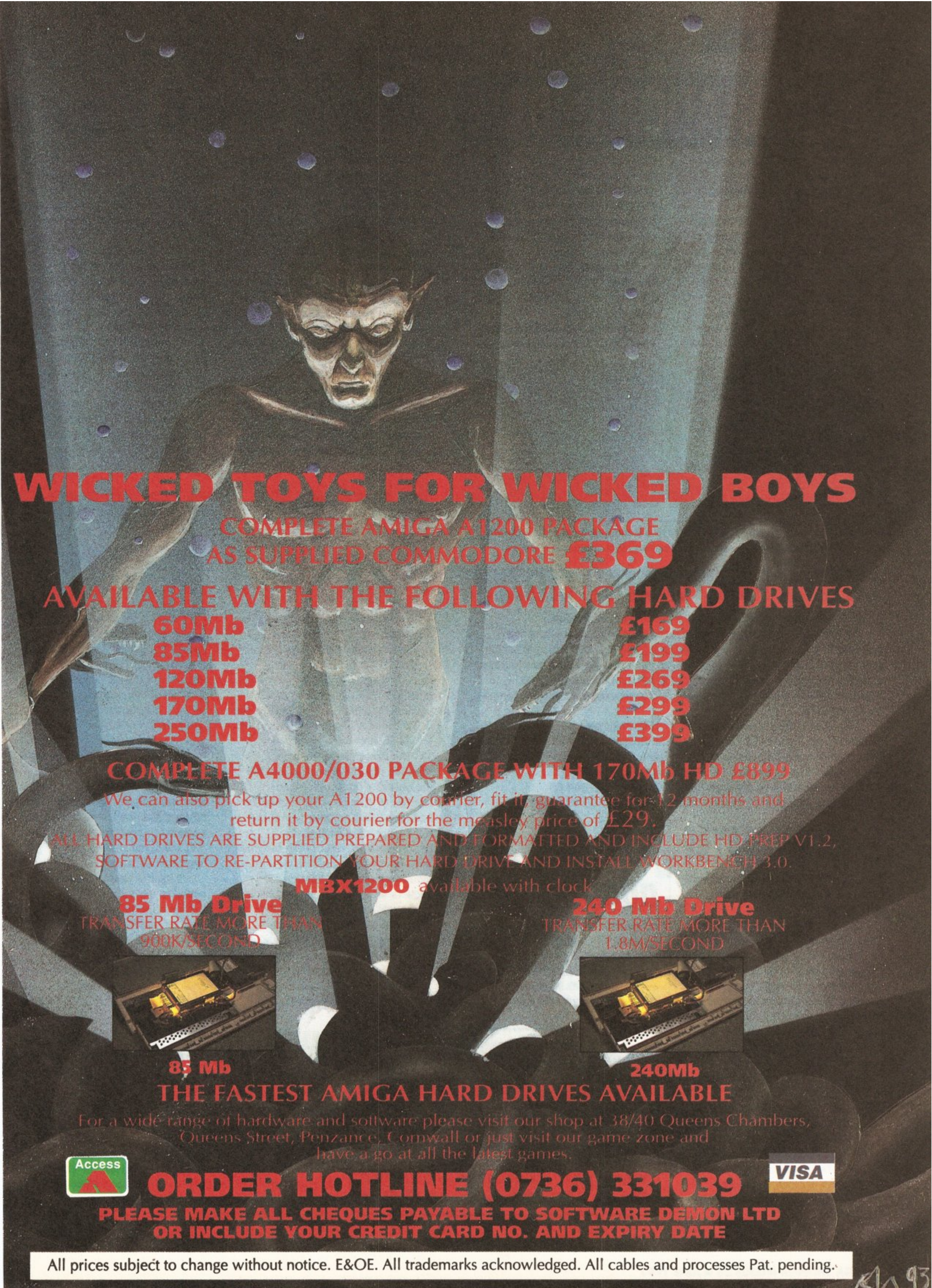
Silica is also selling older Amigas at their lowest-ever prices. A 1Mb A500 can be picked up for £199; for £229 you can get a 2Mb model complete with a *Zool* games package. Alternatively, you can buy the A500 as part of the Cartoon Classics Pack, which includes *The Simpsons, Captain Planet, Lemmings* and *Deluxe Paint III* for £229. Also included in this deal are the *Zool* compendium, GFA BASIC and *Photon Paint*.

If it's an A600 you're after, then you'll be interested in the stand-alone models from Silica, which cost £249 for a 1Mb machine, and £279 for a 2Mb machine. Both come with the *Zool* package, which contains the game *Zool* itself, *Pinball Dreams, Striker* and *Transwrite*.

Silica ☎ 081 309 1111.



Sales of Commodore's CDTV are still disappointing, but perhaps the £50 free software deal now on offer from Silica will help things along a bit...


WICKED TOYS FOR WICKED BOYS
COMPLETE AMIGA A1200 PACKAGE
AS SUPPLIED COMMODORE £369
AVAILABLE WITH THE FOLLOWING HARD DRIVES
60Mb £169
85Mb £199
120Mb £269
170Mb £299
250Mb £399
COMPLETE A4000/030 PACKAGE WITH 170Mb HD £899
We can also pick up your A1200 by courier, fit it, guarantee for 12 months and return it by courier for the measley price of £29.
ALL HARD DRIVES ARE SUPPLIED PREPARED AND FORMATTED AND INCLUDE HD PREP V1.2, SOFTWARE TO RE-PARTITION YOUR HARD DRIVE AND INSTALL WORKBENCH 3.0.
MBX1200 available with clock
85 Mb Drive
TRANSFER RATE MORE THAN 900K/SECOND
240 Mb Drive
TRANSFER RATE MORE THAN 1.8M/SECOND
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THE FASTEST AMIGA HARD DRIVES AVAILABLE
For a wide range of hardware and software please visit our shop at 38/40 Queens Chambers, Queens Street, Penzance, Cornwall or just visit our game zone and have a go at all the latest games.
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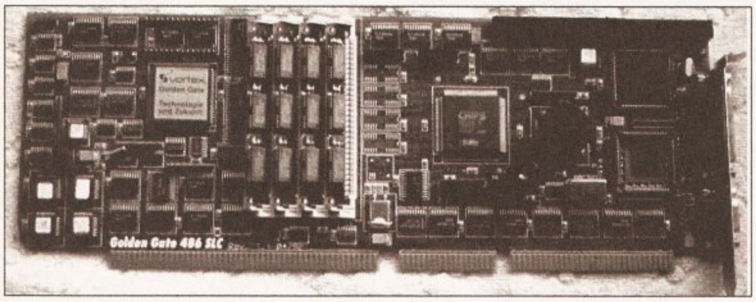
PC EMULATION UPDATE

Owners of Vortex's PC emulators will be interested to learn of a software update that the company is making available.

Version 1.24.23 is applicable to Vortex's Golden Gate 386SX and 486SLC emulators. Three major improvements are provided by the software. First, Amiga floppy drives can be used as PC drives under *Windows*' enhanced 386 mode. Secondly, Golden Gate, which runs as a task under AmigaDOS, can now be given a priority, giving the user the power to control its speed relative to other tasks running on the Amiga. The final benefit is in the department of keyboard emulation, enabling users to assign special keys to individual key codes.

To get your free upgrade, send two Amiga disks along with a minimum of ten international reply coupons to Vortex.

For more information contact Vortex ☎ 01 049 713 159 7214.



Vortex's Golden Gate 486SLC emulator is the most powerful PC emulator available for the Amiga. The latest software update makes it more so

CITIZEN PRINTERS FOR CITIZENS

Citizen Europe has added a low-cost 9-pin printer to its range.

The Swift 90 has a recommended retail price of £233.83. It is also available in a colour version, called the Swift 90C, for £257.33. Citizen has included many of the features of its 24-pin Swift 2 range in the new models, including the easy-to-use Command Vue III control panel, and the ability to handle multi-part stationery, cut sheets and continuous paper, and overhead transparencies.

The printers have a claimed speed of 180 characters per second at 10 characters per inch, and 216 cps at 12 cpi. Six fonts are available in near-letter-quality mode, with two available in draft. Both come with Epson FX850 and IBM Proprinter III emulations. The Swift 90 can be upgraded to print in colour at a later date by the addition of a Colour Kit for £44.65.

For more information contact Citizen Europe ☎ 0753 5841111.

MEMORY MAYBE

Gasteiner is to sell a virtual memory system for the Amiga range of computers.

Called *GigaMem*, the program fools the Amiga into thinking it has up to 1Gb (that's over 1,000 Mb) of RAM available. This is achieved by the program swapping information between hard disk and main memory as needed during the course of normal operations. As a result, many memory-intensive programs can be run on the Amiga concurrently. *GigaMem* costs £69.95, and requires an Amiga with a Memory Management Unit installed (available on 68030 processors and upwards).

Also from Gasteiner this month is an opto-mechanical mouse for £14.95. The mouse has a resolution of 400 dots per inch. For more information call Gasteiner on ☎ 081 365 1151.

Video adaptability

An adaptor enabling VGA monitors to be used with Amigas has been released by RSD Connections. The adaptor, part number CL350, is available for £29.95 from RSD Connections on ☎ 0992 584205.

AVideo board is born

HiQ is to launch the latest version of the *AVideo* graphics adaptor at the *Amiga Format Live* show, taking place from Friday 7 May to Sunday 9th at Wembley Exhibition Centre.

AVideo YC is an external box that plugs into the RGB port of any Amiga running Workbench 2 or above. As well as giving a 24-bit true-colour display, it also comes with a frame grabber, a genlock and paint software (the last requiring a 68020 and a 68881 or better to run). A hard drive, 2Mb of Chip and 4Mb of Fast RAM are recommended.

The frame-grabbing facilities of the board are improved by use of its genlock, which enables the user to see exactly what the image will be like before it is saved to disk or into the *AVPaint* software. Animation is another strong point of *AVideo*, which can display at up to 17 frames per second in a resolution of 724x283 pixels. Using a compressed image format more suited to composite output, the board can animate at up to 25 frames per second. As well as working in 24-bit mode, *AVideo* can be configured to behave as two 12-bit frame buffers, each offering 4096 colours on screen at once.

AVideo YC costs £599, but will be available at a special show price of £549 from HiQ on stand 424. HiQ ☎ 081 909 2092.

To buy tickets for the *Amiga Format Live* show at the bargain advance price of £5.95 call the ticket hotline on ☎ 051 356 5085.

Extra power for A1200s

American-based hardware manufacturer ICD has released an accelerator card for the A1200.

ICD's Viper 1230 contains a 68030 processor, a battery-backed real-time clock, space for memory expansion, a maths co-processor slot and a Direct Memory Access port for the addition of more hardware.

The customer can choose between the EC (economy) and the full 68030 processor for Viper, clocked at 40 or 50MHz respectively. Adding a 68882 maths co-processor will increase the A1200's performance even further in activities such as ray-tracing and Computer Aided Design. Two SIMM memory sockets are on the board, enabling you to add up to 32Mb of 32-bit RAM. The 68EC030 model costs $499, and the full 68030 model is £699. UK Prices and distributorships have yet to be announced.

An innovative feature of the Viper board is its 16-bit Direct Memory Access port. In future this will enable further peripherals such as modems, networking cards or Digital Signal Processors to be added. ICD already has one product available for it: a SCSI-2 controller. SCSI is a standard for hard disk usage on small computers, faster than the IDE interface found inside the A1200. SCSI-2, when coupled to a suitable hard drive, provides much faster transfer rates than the earlier SCSI interfaces. ICD's Viper S2 controller offers a claimed speed of 5Mb per second for asynchronous transfer and 10Mb per second for synchronous transfer.

Once the Viper S2 has been added to the Viper 1230, you have the option to fit a 2.5 inch SCSI hard drive internally, or connect an external drive with the three foot cable supplied. The Viper S2 controller costs $199. Again, a UK price has yet to be finalised.

ICD ☎ 0101 815 968 2228.

AMIGA FORMAT Live '93

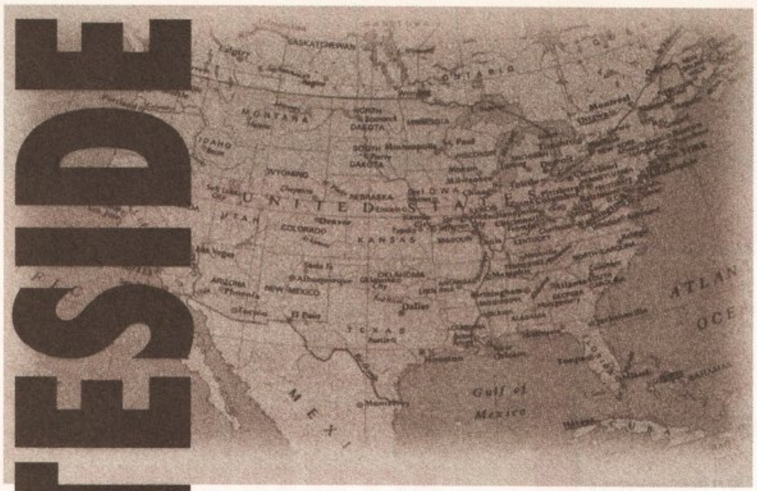
WEMBLEY EXHIBITION CENTRE
7 - 9 MAY 1993

AMIGA FORMAT LIVE UPDATE

Last month we printed information about the seminars running in the *Sound And Vision Experience* section of the *Amiga Format Live* show (at the Wembley Exhibition Centre from Friday 7 may to Sunday 9 May, with tickets at £5.95 on ☎ 051 356 5085 – get them while they're hot!).

Although the seminars will be taking place as listed – music and sound effects; animation and special effects; titling and genlocks; and video editing – the exact products to be used in the seminars have yet to be finalised. We apologise for any confusion.

STATESIDE



Amiga Shopper's own American cowboy – er, I mean correspondent, Bob Liddil, reports on the World Of Amiga show in the Big Apple.

New York City in the springtime – what a pleasure. Trash cans banging, auto alarms going off, and Commodore World Of Amiga vendors rushing about like crazed lemmings, preparing for the arrival of the 20,000 or more Amiganauts who would shortly be crowding the Passenger ship terminal on Manhattan's west side. What a day!

Topping the list of vendors with new and exciting product announcements is CSA, whose venerable line of hardware accessories is legendary in the USA. Faster than a speeding bullet, the new '030 Derringer hits the target, unleashing raw firepower for older Amigas. With the Derringer '030/25MHz and 50MHz accelerator boards, standard Amiga 500s or 2000s can make the transition from passably good to absolutely lethal computing weapons.

The former increases the net computer speed 6.8 times, while the latter slam-dunks processing time an eye-opening 13 times faster! An operation that normally takes 7 or 13 seconds to execute would take little more than a second with one of these hot little pistols. More information can be obtained from CSA, 7564 Trade Street, San Diego, CA 92121 ☎ 0101 619 566 3911. Tell 'em *Amiga Shopper* sent you.

● Great Valley Products introduced its two new products for the A1200: the A1230 Turbo, a 40MHz 68EC030 accelerator with 32-bit RAM expansion capability, and the A1200 SCSI/RAM+, a multi-functional board also offering a high performance on-board SCSI interface. Also on display were an assortment of existing GVP products. Needless to say, business in this booth was brisk.

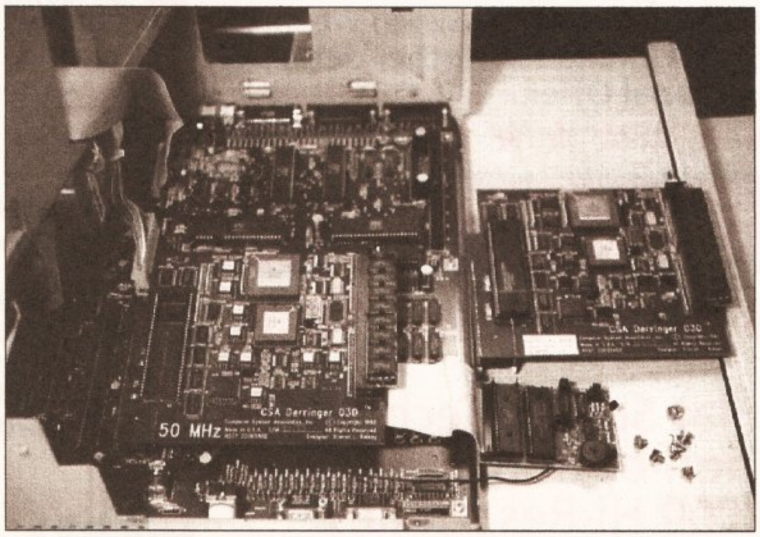
● DKB introduced its latest product for the A1200. The DKB 1202 is a Maths Chip and Wide RAM (that is, 32-bit RAM, which essentially enables you to fetch information twice as fast), with hardware floating point maths capability and the space for up to 8Mb of 32-bit Fast RAM, plus a real-time clock. It seems as though supercharging stock Commodore products is becoming an obsession in the USA.

● Britain's own Microdeal popped across the pond for a visit and displayed its *Clarity 16* music package and *VideoMaster* products, well known on the European side of the pond. Microdeal was greeted warmly by cash-toting Americans who were charmed by polite British answers to such questions as "What does this do?" and "Do you take American Express?" This was Microdeal's first visit to America in two and a half years.

● Migraph says, "262,144 is the magic number!" That's how many colours you can scan and save with the new Migraph CS-6000 Hand Scanner. This useful and handsome product has five scanning modes including a true 64-level grayscale mode; six scanning resolutions from 50-400 dpi; software to scan and save colour, monochrome, and grayscale images in proper file formats; and support for the AGA chipset as well. Now that scanning hundred dollar notes is easy, why doesn't someone invent a way to print them out so that I can retire? This saddle is killing me.

● Premier Software's Roy Tretheway has just announced that he has quit his day job in favour of supporting the Amiga on a full-time basis. This erstwhile entrepreneur, who specializes in the distribution of public domain software and shareware, offers colour labels on his diskettes as well as good prices on several unique packages of accessory-ware for all the Amiga family, old and new. He invites members of the European Amiga community to contact him for swapping or purchase of PD and shareware, as his collection is more profound than just the Fish library. Call him at the US Amiga Help Line ☎ 0101 415 593-1207 and mind the time difference in the morning: he can be grumpy if awakened before 5am US Pacific Time.

● If any single activity at this year's World Of Amiga stands out, it has tc be the price war on new Amigas anc the resultant feeding frenzy coming from users attending. It was like watching piranha in a goldfish bowl. An eight-foot-tall solid wall of A1200 ten feet long virtually disappeared a the machine dipped in price to belov the US dealers' cost (this according to several dealers shaking their heads in disbelief).



If your Amiga's packin' a Derringer, that means it's got a lot of firepower hidden away inside! CSA's Derringer '030/25MHz and 50MHz accelerator boards (one shown in place above) mean supersonic speed even for A500s

RUMBLINGS

There seems to be a state of genera discontent in the USA among Authorized Commodore Dealers, wh nearly universally believe that Commodore cares nothing about their wellbeing. The latest example c disgruntlement was a letter packet, widely circulated among press persons at World Of Amiga, citing Commodore USA indiscretions, broken promises, and a sense on the part of one particular dealer, Amagination in New York City, of total disillusionment. According to this letter, despite more than 1.5 million dollars worth of Amigas purchased from Commodore since 1989, they believe that "Recent events have severely jeopardized th future of the Authorized Amiga Deale Network."

Amagination is the only remaining Authorized Amiga Dealer i all of New York City. Barry Einstein, managing director, believes that uncontrolled mail order sales of Amiga machines will toll the bell for the Amiga as a dealer-supported product. Other, not so blatant rumblings have been circulating for months within the ranks of dealers all over the country. Commodore's response: ignore them and hope the problem goes away. The whole mes reads like an episode of Fawlty Towers.

In general, this year's World Of Amiga was a success for the tens o thousands of Amiga fans who spent lots of money and mingled with representatives of their favourite companies. Commodore, however, continues to duck and cover in answer to many of the criticisms coming its way since posting enormous third-quarter losses and seeing its stock sink to below five points per share. Like the proverbia 5,000-pound gorilla, it does pretty much what it wants to do. Sad. One needs only to say, "Remember the Dragon" to evoke memories of the demise of a popular platform throug corporate inability or inattention to the needs of the dealer and user as a unit.

Now, it's time to head off into the sunset over Manhattan. Until next month, this is your Urban Cowboy saying "Adios" – or "Yo!", depending upon what side of the Brooklyn Bridge one stands on.

Talking Shop

Welcome to the Amiga world's liveliest letters page – where you get the chance to speak your mind. So join your host, the editor, Cliff Ramshaw, for some more no-holds-barred bantering. All you have to do to be included is send your missive to: "Talking Shop", *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Get to it...!

"TEETHING TROUBLES"

Congratulations on being factual concerning word processors. It is an annoying fact that other magazines appear to be biased when comparing word processors with desktop publishers in one and the same breath.

Regrettably, I was also the subject of a horror story concerning Wang back-up.

My 600 is now my eighth since 4 December 1992, and I am currently continuing to press for compensation (which has been agreed in principle).

In fairness to Wang, its system has now improved tremendously with the appointment of an administrator and other changes set in place; I suppose everything has its own teething troubles at times.

I had to override Wang to obtain success and was fortunate to be able to make contact with S J Merryweather of Commodore, who took over the complete supply and testing of a brand new machine which works like a dream with my MPS 1270A printer and 1084S colour monitor. All credit due to Commodore when it comes down to the crunch – keep up the good work.

Please keep up the good work of factual reporting. I have ample time to read and learn from your magazine.

A G Powell
South Glamorgan

Glad you liked the word processor feature, Mr Powell – we are particularly proud of it ourselves. It's also good to hear that Commodore managed to help you out. You can rest assured that we will be keeping an eye on Wang to make sure it *has* sorted out the maintenance teething troubles and is fulfilling its obligations. Write to us if you know otherwise.

"THE CORRECT COURSE"

Can you tell me what is the correct course to become an article writer for magazines or newspapers?

I am a student due to start a set of new courses at college, so information on qualifications and/or experience needed would be a tremendous aid. As a regular reader of your magazine I enjoy your short but informative articles and would be pleased if you could also assist me by giving tips on how to achieve this writing style.

Marcus Boyce
Alfreton

Well, Marcus, as an editor I'm always on the lookout for new writers, and I'm pretty sure you'll find that many other magazines are, too. No formal qualifications are needed – just the ability to write and some in-depth knowledge of the subject you're writing about.

As for style: well, that's just something that comes with practice. Style can't be taught; all you can do to gain a mature style is to do a lot of reading and writing.

"STYLE IS VERY GOOD"

I have found your programming tutorial "Sailing through C" most enlightening. The layout and "ease of use" style is very good but I have one point to put to you. When writing tutorials would it not be wise to do these as "Pull-Outs"?

As I am learning C I have found myself wading through each issue looking for what I need. Surely it would be better to be able to remove tutorials and store them in a folder instead of a pile of *Amiga Shoppers* (as good as they are) stacked on the side of my desk.

As a subscriber to *Amiga Shopper* from issue 2, I have seen many changes to the magazine, 95% of these improvements for the better. The inclusion of cover disks with utilities and so forth is excellent.

Some of the other Amiga magazines have gone overboard on colour, with *no* regard to readers who suffer colour blindness. A grey background with reddish print is for a normal person hard to read; what do you think it's like for one that suffers?

I'm glad that, although you have colour adverts, you keep to black-on-white for your text pages.

To finish I'm happy to see that Toby Simpson is maintaining the standard that you employed in writing the tutorial.

David M Thornton
Dundee

I'm not entirely sure what you mean by "pull-out", David. To include perforations on the pages or such like would increase the cost of producing the magazine, and I'm sure other readers would cite other columns as being ideal candidates for such treatment.

As far as colour is concerned, you can rest assured that we will never let it get in the way of clarity. We have in the past used colour where appropriate and intend to do so in the future, but our primary concern is to get information across. Any aspect of design that prevents this is bad design and you will not be seeing it in our pages.

"POSITIVELY DULL"

I read with great interest the review in *Amiga Shopper* issue 24 of the excellent software from ProDad, namely *Adorage*.

For all the review seemed to have been conducted reasonably well, I got the impression that Gary Whiteley was not totally convinced of the undoubted excellent effects within this package. I have to ask myself what equipment he used to evaluate the software and also to what end did he use the transitions in real time.

True, the software as it stands does not support 24-bit or even HAM images, but surely at this moment in time this package is a breath of fresh air to any person requiring slick, professional-looking screen effects for video work. The very fact that high resolution text can be easily manipulated with stunning results makes other software at this moment look positively dull in comparison.

Peter Ray
Newcastle upon Tyne

Adorage was given a pretty good review by Gary, but it is part of his job to point out the program's limitations – in this case, lack of support for HAM or 24-bit images. If this doesn't concern you, then clearly the program will be that much more suited to your needs.

"TIME AND TROUBLE"

You don't normally print letters of praise [we don't get many – ed], **but I sincerely hope that you will make an exception in this case and print this one, because the company in question deserves some praise.**

I recently wrote to three companies with the aim of obtaining some information, guidance and additional fonts for my copy of *PageStream*. The three letters, along with stamped self addressed envelopes, were all posted on the same day.

Just two days later I received a large, well presented and very informative information pack from EM Computergraphics. Several days later an information pack arrived from one of the other companies. I have still not heard from the third.

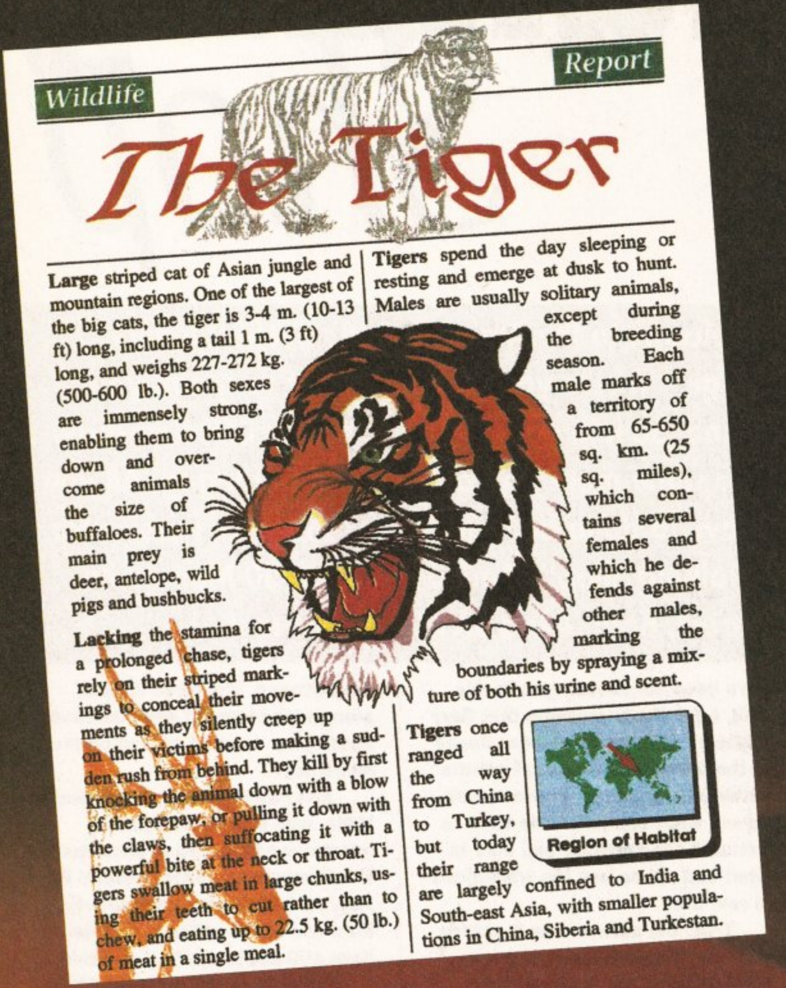
Guided by EMC's detailed info pack I decided on what I wanted and phoned EMC with my order. I found Errol, who answered the phone, extremely knowledgeable. He answered my numerous questions concerning the fonts and their installation without hesitation, which proved to me that he knew what he was talking about. As a result, I placed my order for two of the EMC Type I volumes of fonts.

To cut a long story short, I found the EMC disks were very well laid out, the information and installation instructions were very clear and written with a beginner rather that a professional user in mind. I soon realised that a lot of time and trouble had gone into the construction of the disks and was very happy that I had decided to place my order with EMC. I'd like to give EMC 10 out of 10 for their presentation and quality of their disk layout.

Bill Bakayi
Catford

Well, it's nice to hear things went smoothly. If anyone else has any congratulations to give to Amiga-related suppliers, drop us a line.

The Best Word Publis
(Amiga Form



Wildlife Report

The Tiger

Large striped cat of Asian jungle and mountain regions. One of the largest of the big cats, the tiger is 3-4 m. (10-13 ft) long, including a tail 1 m. (3 ft) long, and weighs 227-272 kg. (500-600 lb.). Both sexes are immensely strong, enabling them to bring down and overcome animals the size of buffaloes. Their main prey is deer, antelope, wild pigs and bushbucks.

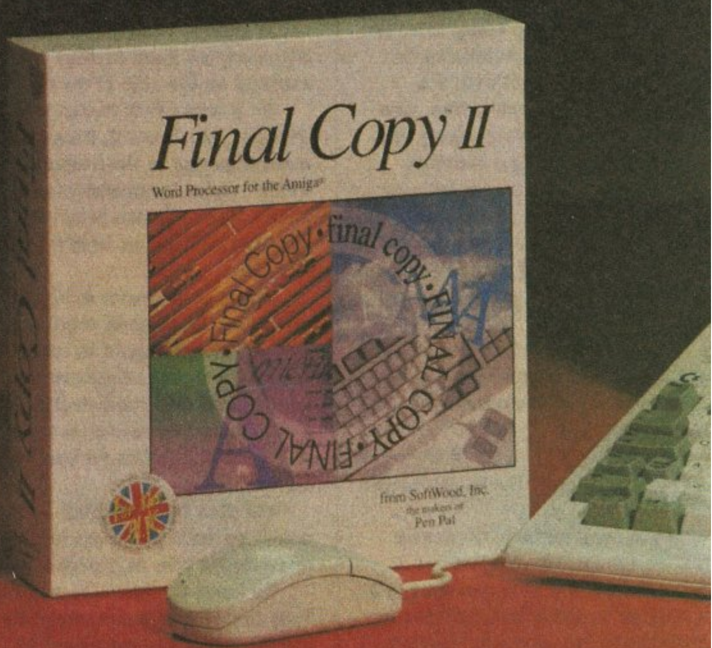
Lacking the stamina for a prolonged chase, tigers rely on their striped markings to conceal their movements as they silently creep up on their victims before making a sudden rush from behind. They kill by first knocking the animal down with a blow of the forepaw, or pulling it down with the claws, then suffocating it with a powerful bite at the neck or throat. Tigers swallow meat in large chunks, using their teeth to cut rather than to chew, and eating up to 22.5 kg. (50 lb.) of meat in a single meal.

Tigers spend the day sleeping or resting and emerge at dusk to hunt. Males are usually solitary animals, except during the breeding season. Each male marks off a territory of from 65-650 sq. km. (25 sq. miles), which contains several females and which he defends against other males, marking the boundaries by spraying a mixture of both his urine and scent.

Tigers once ranged all the way from China to Turkey, but today their range are largely confined to India and South-east Asia, with smaller populations in China, Siberia and Turkestan.

Region of Habitat

We'd simply call it the best Amiga Word Processor. But if after using it, the experts insist on calling Final Copy II the best Word Publisher as well, we're not complaining!

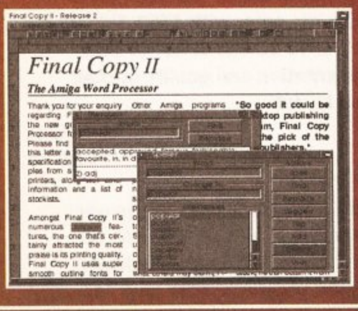


Final Copy coined the phrase "Perfect Printing on **any** Printer". We mean it - this document proves it!

Created in Final Copy II and printed on a standard 24-pin Citizen Swift, it shows a small number of Final Copy II's features: Smooth Scaleable Outline Fonts, Multiple Columns, Drawing Tools for Boxes, Borders, Shadows, Lines and Arrows, White-Out Text, Text Printed over Graphic Images, Text Obliquing, Auto-Flow Text around Graphics and of course, Import of Colour and Mono Graphics Pictures.

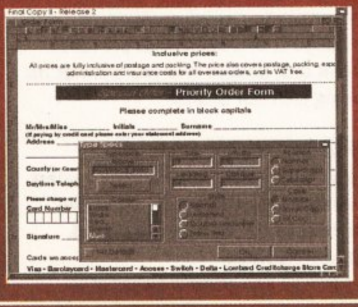
Fina

Word Publishers go beyond simply producing normal letters and documents (at which Final Copy II naturally excels) and progress into a world where *how the whole document looks* is just as important as *what it says*. Admittedly, this can be achieved with Desk Top Publishers, but they can't easily be used as Word Processors, especially when a good looking letter needs creating quickly - they're far too cumbersome. This is where Final Copy II offers the perfect balance between the two requirements. Ease and speed of use, combined with complete control and perfect final printed presentation.



Document creation is so simple with 28 On-Screen Buttons for routine formatting and navigating commands, like Auto-Hyphenation. With *true* WYSIWYG display, you can even edit whilst your pages are magnified up to 400% (or reduced). Long documents are supported with Title/Master Pages, Style Sheets, Left/Right Page Binding Offset and Auto Numbering. Because your text needs to be perfect, the British-English Collins Proximity Speller combined with the Thesaurus (for that added inspiration) help you to produce the precise, printed page.

Compugraphic, Adobe Type 1 PostScript or Nimbus Q PostScript? If you *want* lots o you can *have* lots of fonts! Final Copy II can use thousands of superior Adobe Type 1 or Ni fonts (the same as those used on professional publishing systems). Both these types are PostScri but unlike all other Word Processors you don't need an expensive PostScript laser to use ther Copy II *will* print them on PostScript lasers, *or* any graphics capable printer. This includes matrix or ink-jet you probably already own. Even if you have your own Compugraphic* fon



you'd still like to use, Final Copy II is fully con outputting to any graphic printer. Final Cop unrivalled in its range of fonts supported, and as see here, you have complete control over text for When using the outline typefaces included, additional fonts, they'll output perfectly† - no mat size they're scaled to - with absolutely *no* Opening multiple documents also allows editing printing in background mode (free memory deper

Compatible with all Amigas from A500 to the latest A1200/A4000 ranges with either a second floppy or a hard drive. A minimum of 1Mb. of available free RAM is required (A600 hard drive - 1.5Mb.) however, as with all advanced graphical programs, extra memory (eg. 1.5/2Mb. - the more the better) will be required to exploit all features fully.

Available from all good Amiga Software Dealers,

or from SoftWood Europe - please phone for a list of nationwide stockists.

ng Program of its Type
s words not ours)



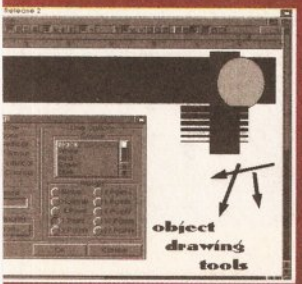
Amiga Format think we have the Best Word Publisher. We'll show you why with a list of features that users tell us are important (below).
If you'd like to know who's also chosen Final Copy, Commodore specify it as an option with some of the most powerful Amigas available in the United States. What better recommendation could you have?

	Feature	Wordworth 2	Final Copy II
Fonts and Printing	Compatible with Standard Amiga Workbench 2 Compugraphic Fonts	YES	YES, But would Suggest use of Better PostScript Fonts
	Compatible with Standard Adobe Type 1 and Nimbus Q Scaleable Postscript Fonts	NO/NO	YES/YES
	PostScript Font Outlines on all Printers	NO	YES
	Maximum Number of PostScript Fonts	Limited to a total of 35	Infinite
	Download Extra Fonts to PostScript Printer	NO, Can't download extra fonts	YES, Automatic
	Landscape (Sideways) Printing on all Printers	NO	YES, Automatic
	Reclaim Printing Resolution (Quality) of Scaled (Reduced and Enlarged) Graphic Images	NO	YES, Same High Quality when Reduced and Enlarged
	Print any Text or Graphic in Colour	YES	YES
	No. of Colours Printed in Imported Pictures	Limited by Screen Mode Used	Output as Original Image
	Graphics Printing (HAM & IFF ILBM)	Good if Graphics not Scaled	Always Best Possible
	Text Width (Compress and Expand)	NO	YES
	Variable Text Obliquing (Slanted Text) Both Positive and Negative Attributes	NO	YES
Graphics	Box, Rounded Box, Circle, Oval, Line, Variable Border & Arrow Drawing Tools	NO	YES
	Crop (Trim) to Size Imported Graphics	NO	YES
	Supports A1200/4000 AGA Chipset	YES, 256 On-Screen Colours	YES, 256 On-Screen Colours
	Create Border around Graphics and Pictures	NO	YES
Editing and Formatting	British-English Spelling Checker	YES, Collins Proximity with Legal & Medical Supplements	YES, Collins Proximity with Legal & Medical Supplements
	British-English Thesaurus	YES, Collins 826000 Synonyms	YES, Collins 826000 Synonyms
	Page View Magnifications and Reductions	One Fixed Print Preview	7 Variable stages - 25% to 400%
	Edit Document while Magnified or Reduced	NO	YES
	Search & Replace (150 words in 9000, 7 Pages)	61 Seconds (On Amiga A1200)	7 Seconds (On Amiga A1200)
	Index and Table of Contents	YES, Automatic	NO, Requires Manual Entry
	Multiple Newspaper Style Snaking Columns	YES, 2 to 32	YES, 2 to 6
	Style Sheets, Master Pages, Title Pages	NO	YES
	Uses Standard Amiga Clipboard for Cutting & Pasting to and from Different Applications	NO	YES
	Small Caps Typographical Control	NO	YES
Genearal Features	Conforms to Commodore's Amiga Standard 'Look & Feel' Guidelines	NO, Non Standard User Interface	YES
	On-Screen Maths (Column Addition)	NO	YES
	Import ASCII Text from any Word Processor	YES	YES
	UK Registration, Upgrade and Support	YES	YES
	Free Memory Required	1.5Mb. Minimum More Recommended	1Mb. Minimum More Recommended
	Free Ongoing Technical Phone Support	NO, £38 per year after 60 days	YES, Free of Charge
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Copy II

Release 2 available now!

plete control over how your documents look, now you have it! Final Copy II incorporates: reen Drawing Tools for generating boxes, borders, and lines or arrows at any angle, Multiple Newspaper snaking columns, combined with the unique ability to print the same PostScript quality outline fonts - on tely *any* printer in portrait or landscape. These all mean that no matter what you may have thought, no Amiga Word Processor has all the capabilities that Final Copy II users now simply take for granted!



The almost endless list of features includes On-Screen Object Drawing Tools (no more importing of borders from drawing packages to frame graphics or reverse-highlight text) with selectable rulers to aid precise positioning. Text Auto-Flows around graphic objects and imported pictures, which can be placed anywhere, scaled *and* cropped, with *no* loss of printing quality. Text can also be printed actually *over* graphics (refer to *"The Tiger"* heading on our document). No other Word Processor for the Amiga offers all this. *(*Compugraphic fonts require Kickstart 2 and Workbench 2.1 or later, with Final Copy II. They will not output on PostScript printers from any Word Processor - and would always be our second choice. [1] All fonts used in Final Copy II can print to the highest resolution that the printer will output).*

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The inside story

Unsure of how your Amiga works? Want to know what's going on beneath that calm, cool exterior? Now's your chance to find out, as Gus Chandler reveals the innermost secrets of its power

To enjoy the computing power that's on offer if you own an Amiga, you certainly don't have to know anything about what's actually happening underneath the bonnet. Indeed, it's perfectly fair to say that the majority of Amiga users are much happier if all that's required is to stick a disk in the side of the machine and hope that it's self-booting. At the most, they want to have to do no more than double-click on a couple of icons.

But the thing is, if you're that type of Amiga owner, you're probably not going to be reading this magazine anyway. At *Amiga Shopper* we see curiosity as a wonderful thing – so, over the coming few months we'll be taking a detailed look at what makes the Amiga tick, examining what the functions of all the different components are, and revealing how they work. In fact, we'll be exposing the soul of the machine.

There's another reason besides having an inquisitive nature that should encourage you to follow this series – you'll quickly find that once you have a more detailed understanding of the way the machine functions at the lowest levels, areas such as assembler programming become much more comprehensible.

This month (beginning on page 24) you'll find that we've started the series with a basic guide to the principles of digital logic – an important part of the theory behind micro-processors. In future months we'll be delving deep into the innards of the Amiga's chips, discussing things like hardware registers, addressing systems, data buses and interrupts. We'll also be covering a range of "add-ons" such as memory expansions, disk drives and accelerators, revealing the secrets of how they work and how they connect up to the Amiga.

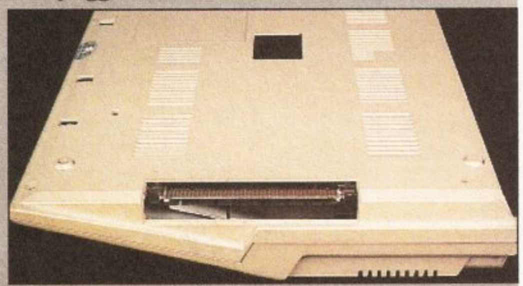
Before we get into all that, though, here's a quick introduction to the various components that are dotted around the circuit board of an Amiga and all of those sockets on the back. In future issues we'll be examining these components in detail and seeing how they interact, but for now we'll settle for just naming them and giving you a brief resumé of their functions – that way we won't have to resort to phrases

continued on page 24

THE MAIN EXPANSION SLOT

On the left hand side of the machine you'll find the main expansion slot. A variety of peripherals can be plugged into this slot – a hard disk drive or additional memory are typical examples.

You'll also find that there is a range of accelerator cards available that you can plug into this slot – these have their own CPU and are clocked at a much higher speed than the A500's standard 68000 CPU, which means they work faster.



THE AMIGA A-500 – A REAR VIEW

JOYSTICK PORTS

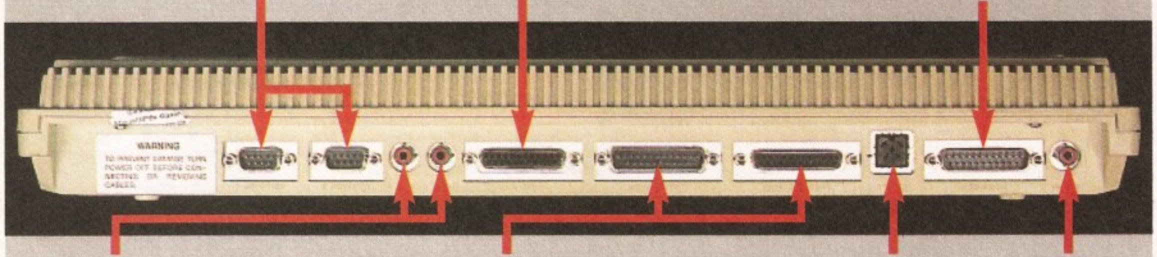
As seems fairly obvious from their names, this is where the joysticks plug in. The first joystick port (the one on the left) is also used for the mouse.

DISK DRIVE CONNECTOR

A further floppy disk drive can be connected here.

RGB-VIDEO OUTPUT

This is the Amiga's video output – the socket you use if you have a colour monitor. If you're using a TV set instead, then you need to connect a box known as an RF modulator between this socket and the TV. This converts the RGB output to the radio frequency signal a TV expects.



RIGHT AND LEFT AUDIO SOCKETS

Two standard "line-out" audio sockets – connect them up to your hi-fi for full stereo sound from your computer.

SERIAL AND PARALLEL PORTS

A wide variety of peripherals can be connected to these two ports – typically, you might connect a modem to the serial port (also referred to as an RS-232 port) and a printer to the parallel. The principal difference between the two is that the serial port sends or receives data one bit at a time ("serially"), while the parallel port handles data in eight-bit chunks (bytes). This means that data can be read or written by the parallel port at a much greater rate than is possible serially.

POWER SOCKET

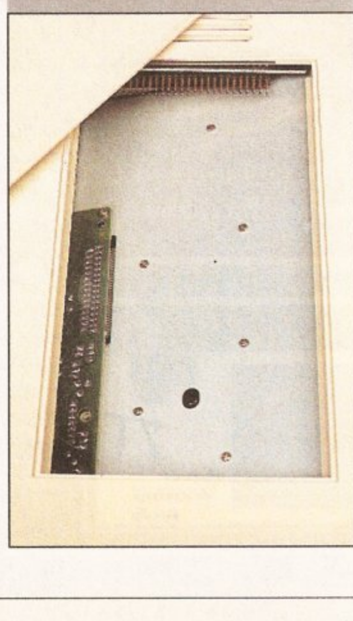
The lead from the transformer (the standard Commodore power supply) plugs in here.

MONO

If you have a mono monitor, this is where it plugs in.

THE TRAPDOOR

If you turn your Amiga upside-down you'll find that there's a clip-out plastic cover underneath – called, appropriately enough, the trapdoor. Remove the lid and you'll find that there's an expansion slot hiding underneath. The slot's principal purpose is to accept memory expansion cards.



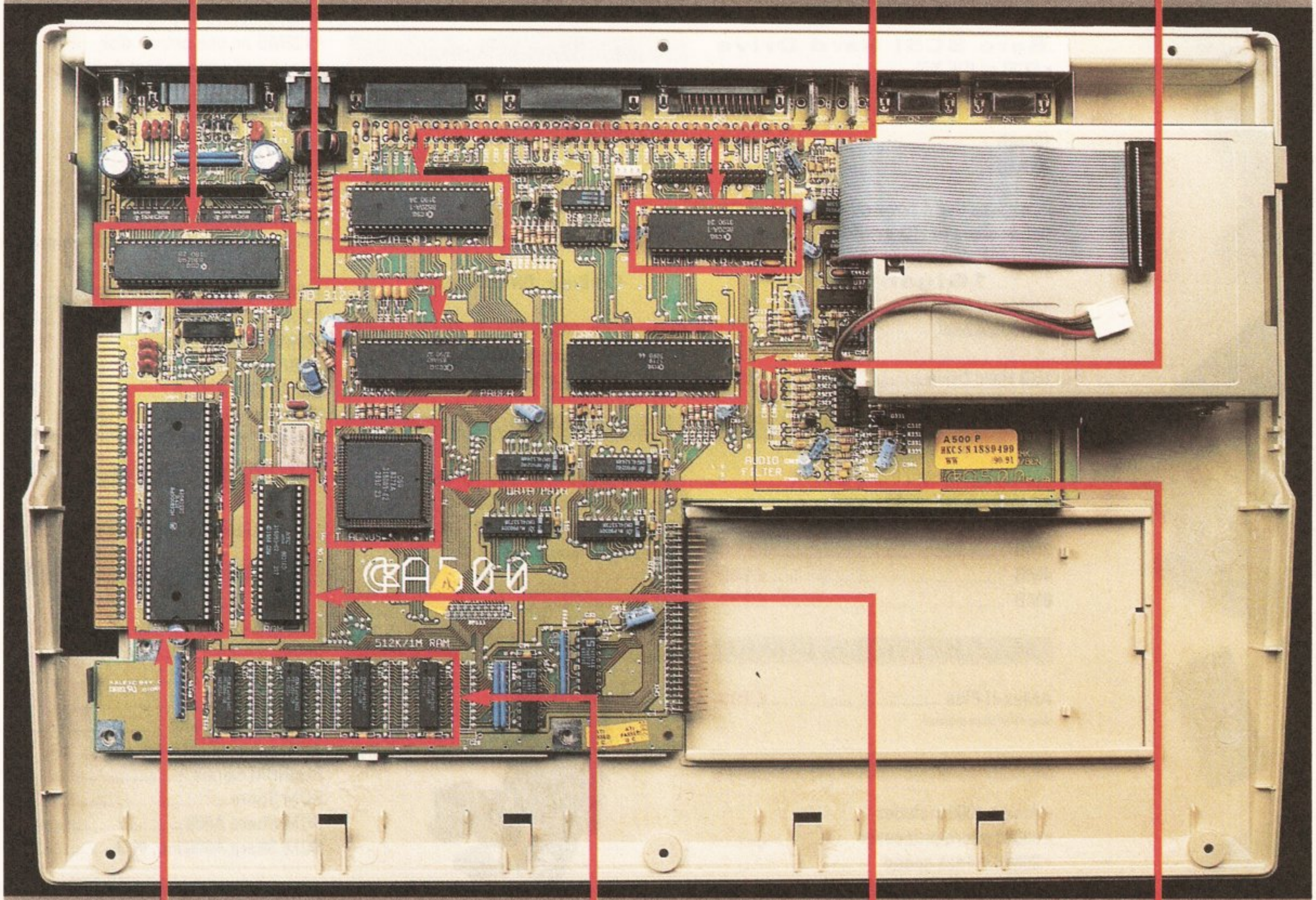
WHAT'S ON THE A500 CIRCUIT BOARD, MISS FORD?

DENISE
DENISE is the chip that lies behind the powerful animation capabilities of the Amiga. Many computers don't have a dedicated chip to perform this function – it has to be done by the software (which reduces the time available for the program to do everything else it has to do). DENISE uses hardware registers to handles sprites (up to eight at a time) and deal with things like collision detection (when a sprite comes to touch another object). This allows for the very smooth and fast animations that have made the Amiga so popular as a graphics machine.

PAULA
Another of the machine's custom chips, PAULA is responsible for the sound. It supports four voices in two stereo channels over nine octaves. PAULA is interrupt-driven – which means that music can always be played at the correct speed.

ODD and EVEN CIA
CIA is an acronym for Complex Interface Adaptor, and these chips are the machine's two user-programmable input/output ports. Their job is to control the serial and the parallel ports and to handle the keyboard and the disk drive.

GARY
This is the custom control chip – it provides the bus signals that keep all of the operations that are happening on the circuit board in synchronisation. It also deals with decoding addresses (for memory access) and has circuitry to look after the keyboard reset command (Ctrl-Amiga-Amiga)



MOTOROLA 68000
You'll find that there's a Motorola 68000 (or better) acting as the powerhouse of every Amiga – it's the Central Processing Unit. Different models of the machine sport different variants of the 68000 – it's a family of compatible chips. It's not the 68000 that makes an Amiga an Amiga, though – that's down to both the custom chips (DENISE, PAULA and FAT AGNUS in the A500) and the operating system. You'll find there are 68000s in a variety of other machines – STs and Macs, to name a couple. The other common family of CPUs you may have heard of is the Intel 80x86 (80286 and 8036 are the most common) – the micro-processors that power the PC.

RAM
The Random Access Memory. Unlike ROM, RAM is "volatile" memory – once the power has been turned off anything stored there is lost. The RAM is used to hold programs that you are currently running as well as their data.

ROM
The Read-Only Memory. This contains programs (such as Kickstart and some libraries) that are available to the Amiga as soon as it is powered up and enable the machine to load further software such as the Workbench. As the name suggests, Read-Only Memory can't have information written to it. It's also what's known as "non-volatile", which means that it is permanent memory – data isn't lost when the power is disconnected, unlike RAM.

FAT AGNUS
This is the Amiga's custom graphics chip, responsible for handling the display and delivering all those lovely colours. The version in this machine, the 8372A, can access 1Mb of Chip RAM. Earlier versions could only handle up to 0.5Mb, while the version of the AGNUS chip in the A500 Plus, A600 and A1200 (called the "fatter AGNUS") can access 2Mb.

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GOLD

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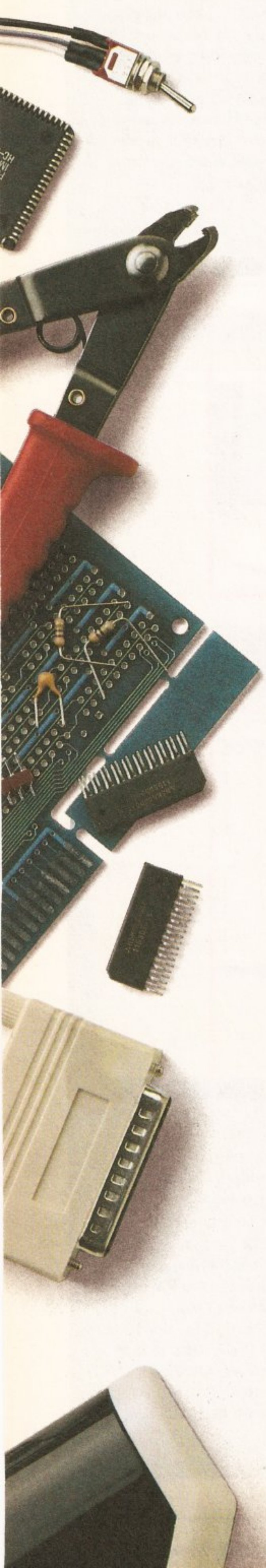
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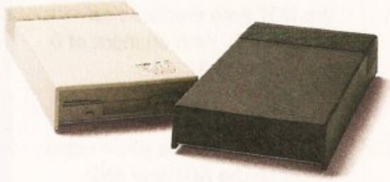
3.0 Upgrade (inc. interface)........£49.95
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he Amiga can only display 16 greyscales

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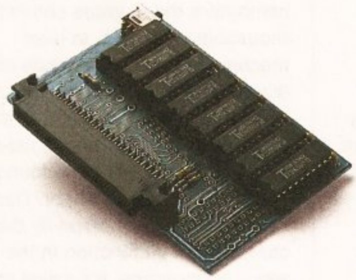
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continued from page 21

like "that dirty great connector on the left hand side" when we come to describe the expansion slot.

THE TRUTH ABOUT LOGIC

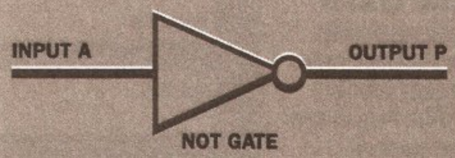
So how do all these chips work, and how when they are connected together do they make an Amiga? Over the coming months we'll be exploring the purpose of these different chips in detail. But before we do that, this month we'll start by examining the principles of logic that underlie the functioning of the micro-processor.

Digital computers use binary numbers to represent internally the information they receive from the "outside world". The reason computers use binary – instead of the base 10 system more familiar to humans – is that there are only two possible states for a binary digit, 0 and 1, and these are easily represented in the language of digital electronics. Now, while we may think of binary numbers as being a stream of 0s and 1s, the micro-processor has no such concept – it deals in pulses of electricity. In the world of the chip, the binary digit 1 is represented by a pulse of electric current, and 0 by the absence of a pulse.

Fine, so we've got to the stage that we have strings of binary numbers whizzing about inside a chip, represented by pulses (or the lack of pulses) of electric current. But how does the micro-processor go about manipulating these streams of data? It does this by using what are known as logic gates. In the earliest computers these gates consisted of thousands of valves, in later machines tens of thousands of discrete transistors soldered to printed circuit boards, and in modern machines the millions of solid-state transistors that are to be found within the micro-processor. Despite the enormous size disparity these components all function in the same way – as switches. It's using these switches that we assemble the basic "building block" components – logic gates – that underlie digital electronics and the functioning of micro-processors.

This month we're taking a look at how these logic gates work from first principles, then going on to examine how these simple "building blocks" can be arranged in different sequences to produce powerful functional units. Finally we'll see how these functional units can be combined to perform the useful operations that you associate with computers – such as adding two numbers.

THE NOT GATE



INPUT A	OUTPUT P
0	1
1	0

THE NOT GATE

The simplest of these building blocks is the NOT gate. What a NOT gate does is to take a single input and switch it to its opposite – that is, if the input A is 1 then the output P will be 0. Similarly, if the input A is 0 then the output P will be 1. We've used a truth table to show these two cases.

Function: Given an input of 1 the NOT gate produces an output of 0. With an input of 0 the output is 1.

THE AND GATE

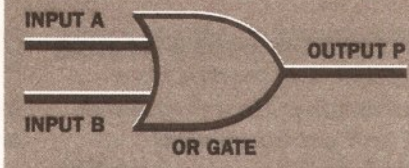
The first difference you'll notice between the NOT and AND gates is that there are two inputs rather than one going into the AND gate. With the NOT gate and its one input there are only two possible values that the gate can be presented with – 0 and 1. For the AND gate with its two input lines the number of possible input combinations rises to four – 0,0; 0,1; 1,0; and 1,1.

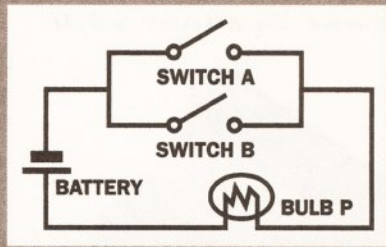
(The number of possible input combinations is determined by 2 raised to the power of the number of inputs. A NOT gate has one input and hence 2^1 possible combinations, that is 2. A two input AND gate has 2^2 combinations, 4; while three and four input gates would have 2^3 and 2^4 combinations respectively – that is, eight and 16 possible states).

You should be able to see from the truth table that only one of the four possible input combinations gives an output of 1. And that combination was the one that had both of its inputs as 1. So to put it in English – if the first and second input values of an AND gate are 1, then the output value will be 1. For all other input combinations the output will be 0.

The analogy that's most frequently employed when it comes to explaining logic gates is one that describes the gate as a simple electric circuit. We've included a diagram of such a circuit. Here the two inputs are represented by two switches, A and B, and the output by a bulb P. The input values A and B are 0 when the switches are open and 1 when they are closed. Similarly, the output P is 1 when the bulb is on and 0 when it's off. It

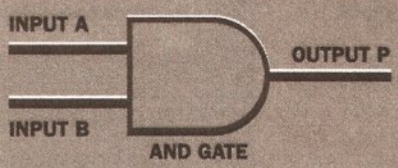
THE OR GATE

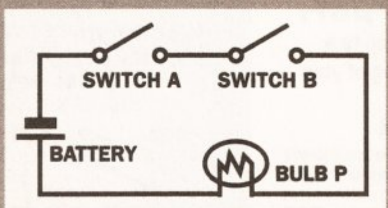




INPUT A	INPUT B	OUTPUT P
0	0	0
0	1	1
1	0	1
1	1	1

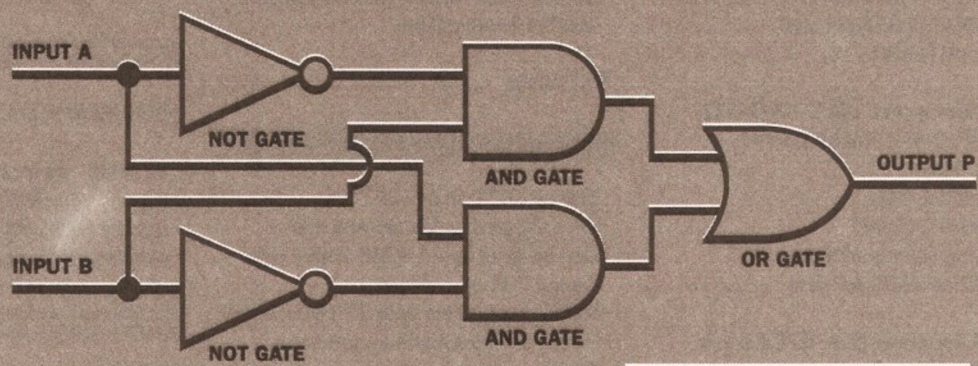
THE AND GATE





INPUT A	INPUT B	OUTPUT P
0	0	0
0	1	0
1	0	0
1	1	1

THE XOR GATE





INPUT A	INPUT B	OUTPUT P
0	0	0
0	1	1
1	0	1
1	1	0

should be clear from a simple inspection of the circuit that it's impossible for the bulb to be lit unless both switches are closed. A truth table for this circuit is identical to the truth table that is derived from the AND gate – the circuit is logically equivalent to the functioning of an AND gate.

Function: The AND gate gives an output of 1 only if both the A and B inputs have the value 1.

THE OR GATE

Like the AND gate, the OR gate has two inputs and hence four possible pairs of input values. You can see from the truth table that if either of the inputs A and B has the value 1 then the output P will also be 1. Take note of the fact that the output P has the value of 1 when both inputs have the value 1.

Again we'll use the electric circuit analogy to represent how an OR gate functions. From this diagram it should be clear that with the switches A and B arranged in parallel, if either of them is closed (representing an input value of 1) then the bulb P will be lit (an output value of 1).

Function: The OR gate gives an output of 1 if either the A or B input has a value of one.

THE XOR GATE

The next logic operation to consider is XOR. This is a little more complicated – that's because the XOR gate is actually made up by combining the operations of the three gates that we've already discussed. If you look at the logic diagram for the XOR gate, you'll see that it's constructed using two NOT gates, two AND gates and an OR gate. Rather than laboriously draw out this five gate network each time, we use a symbol to represent it. It looks similar to the OR gate but has a bar behind it.

The term XOR stands for eXclusive OR and the gate is identical in function to the OR gate – with one important exception. If you compare the truth table for the XOR gate with that for the OR gate you'll be able to see that the first three lines of each table are identical. The difference in function occurs when both the inputs, A and B, have the value of 1. For this condition the XOR gate gives an output of 0, whereas the OR gate gave an output of 1.

It's worthwhile at this point making sure that you understand how the combination of five gates that we've used to assemble the XOR gate produces the results. Try taking a couple of input values, say A=1 and B=0, and follow them through the gate network by hand. If you do this correctly you should come up with an output value of 1 – this corresponds to the third line from the XOR truth table. Now try taking the values A=1 and B=1 and following them through the network – you'll get an output of 0.

Function: The XOR gate gives an output of 1 if either the A or B input has a value of one, but not if both of them do.

THE NAND GATE

While the NAND gate is considered as a gate in its own right, it's not really. It can be constructed simply by combining two of the basic building block gates that we've already considered – the AND and the NOT gates.

We've seen how an AND and a NOT gate are connected together to make a NAND gate and we've also given the truth table for the gate. If you want to verify how this table is arrived at, take the four output values from the AND gate truth table and feed them through the NOT gate – you'll end up with the same values as appear in the output column of the NAND gate truth table.

Function: Produces an output value of 1 in all cases except when both input values A and B have the value of 1.

THE NOR GATE

Like the NAND gate, the NOR gate can be formed by combining the operations of two of the basic gates – this time the OR and NOT gates. Again you can check how we arrived at the truth table for the NOR gate by taking the output values of the OR gate and applying the NOT function to them.

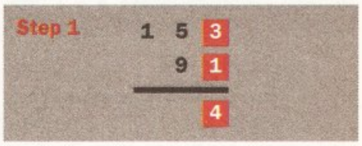
Function: Gives an output value of 1 only if both input values A and B are 0.

USING LOGIC GATES TO ADD NUMBERS

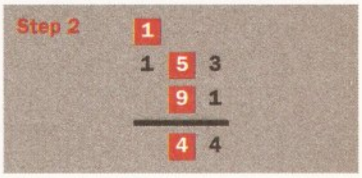
Okay, so we've seen what single logic gates do in isolation and we've also introduced the concept of combining gates to form other functional units – the XOR, NAND and NOR operations. Now let's examine how you can use a series of gates to perform one of the sorts of operation a computer does a great deal of – adding two numbers together.

First, though, we'll examine the steps that a human goes through when adding two decimal numbers. Let's pick on the numbers 153 and 91 and add them.

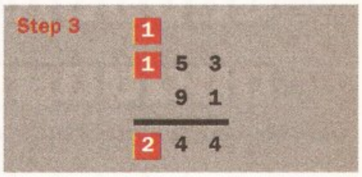
Step 1: We start by taking the least significant digit (the rightmost) from the first number, a 3, and the least significant digit from the second number, a 1, and add these together to give the "units" column of the product, a 4.



Step 2: Next we take the next digit to the left from both the first and second numbers, 5 and 9, and add these to give us the "tens" column, a 14. Er, well, that doesn't quite work – we can only put a single digit in any column. So we put the 4 in the "tens" column and carry 1 to the "hundreds" column.

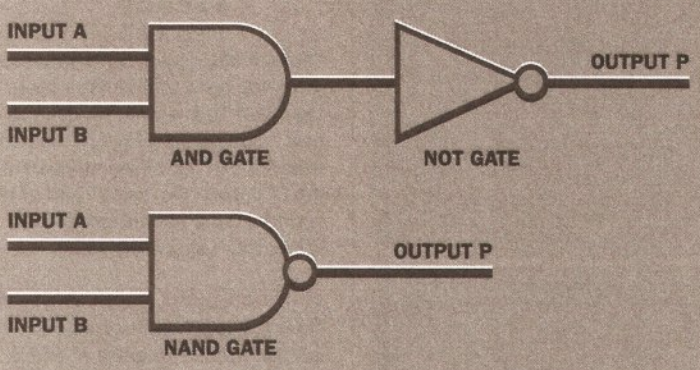


Step 3: Now we use the third digit from the first number (the second number has no third digit) and the 1 that we carried over in the previous step to give us a 2 to put in the "hundreds" column.



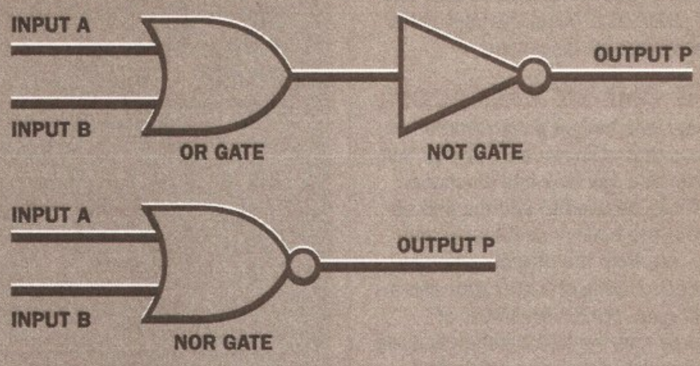
Right, that's how the human mind goes about dealing with the process

THE NAND GATE



INPUT A	INPUT B	OUTPUT P
0	0	1
0	1	1
1	0	1
1	1	0

THE NOR GATE



INPUT A	INPUT B	OUTPUT P
0	0	1
0	1	0
1	0	0
1	1	0

of adding two numbers. Now let's take a look at how to achieve the same result adding the binary equivalents of 153 (10011001) and 91 (1011011) using the logic gates that we've just discussed.

THE ONE-BIT HALF ADDER

Okay, let's look at a combination of gates that is known as a one-bit half adder and see how this functional unit can be used to add the first bit of our two binary numbers. As you can see from the diagram, the half adder consists of a XOR gate and an AND gate. (You'll remember of course that the XOR function is itself composed of five gates: two NOT gates, two AND gates and an OR gate).

We'll look first at what the XOR gate does in the context of adding two binary digits. With two digits there are four possible binary additions that we can perform: 0 + 0 = 0; 0 + 1 = 1; 1 + 0 = 1 and 1 + 1 = 10. Notice, of course, that the sums 0 + 1 and 1 + 0 are equivalent. Now, the sum 1 + 1 gives us a two digit answer, 10, and since in the world of logic gates we want to deal only with single digit inputs and outputs let's write this sum in a slightly different way: "1+1 = 0, carry 1" – that is, put a 0 in the "units" column and carry 1 to the "twos" column.

Putting this another way: to get the "units" digit – the least significant bit – we want an output of 1 if either of the inputs A and B has the value 1, but not if they both do. Now checking back to the truth table for the XOR gate, you'll see that it gives just those results. This means we can consider the XOR gate as a unit that will add two binary digits together but only give us the least significant bit of the answer.

Let's take the least significant digit (the rightmost – that is, A^0 and B^0) of each of our binary numbers, A and B, and feed these into our half adder. If you follow the logic diagram through you'll see that we get two outputs: P^0=0 and C^0=1. Now, P^0 is just the output from an XOR gate, and we've seen that this gives us part of the answer – the least significant bit. But C^0? Well, as you've probably worked out for yourself, this is the other digit – the most significant bit. And how did we get it? Simply by feeding the inputs A^0 and B^0 through an AND gate. If you look back to the AND gate truth table, you can see there is only the one combination of inputs, 1 and 1, that gives an output of 1.

The half adder can therefore be used as a device for adding two binary digits together thus:

A + B = C P
1 + 1 = 1 0

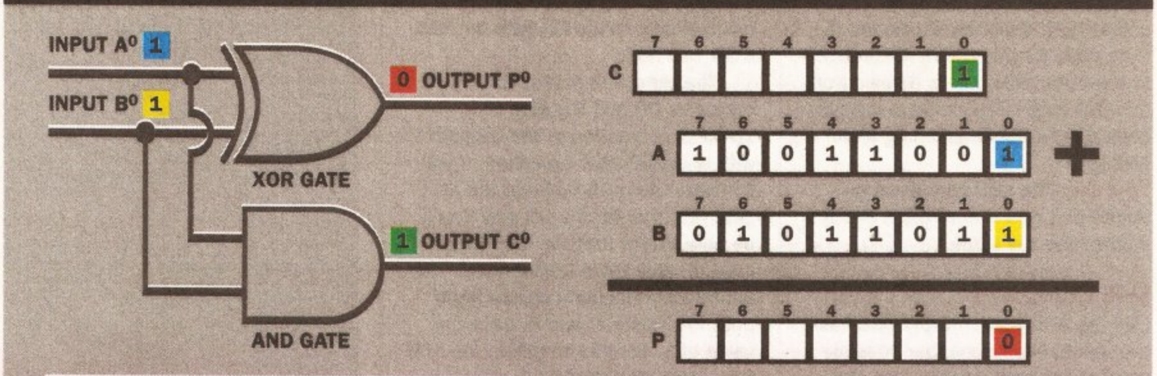
That's pretty useful, but what about when you need to add three digits together? This is what we need to do now – add the next digit (A^1 and B^1) from each of our binary numbers plus the C^0 output (the "carry" part of the sum) from our half adder addition. We do this using a full adder.

THE ONE-BIT FULL ADDER

The full adder has three inputs – for our example we're using A^1 and B^1 (the next digits of the two numbers that we're trying to add) and the carry output from the half adder addition that we've just performed (we've called this input C^0).

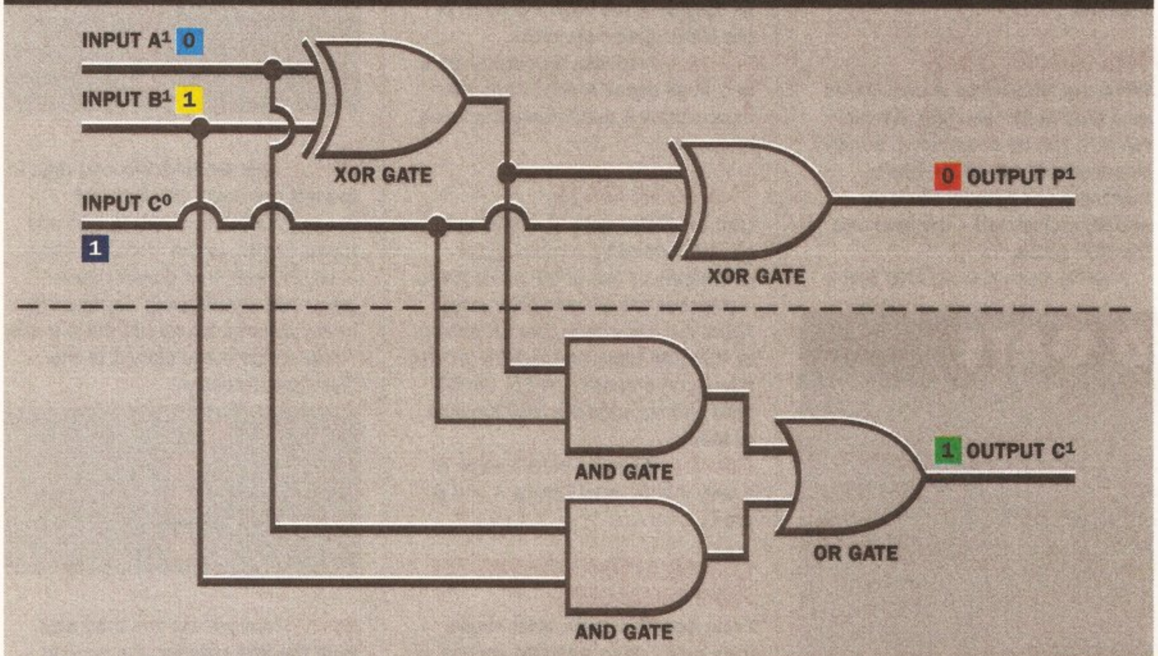
On our logic diagram at left we've used a dotted line to divide the full adder into two sections. Let's think first about the top half – this produces the least significant bit of

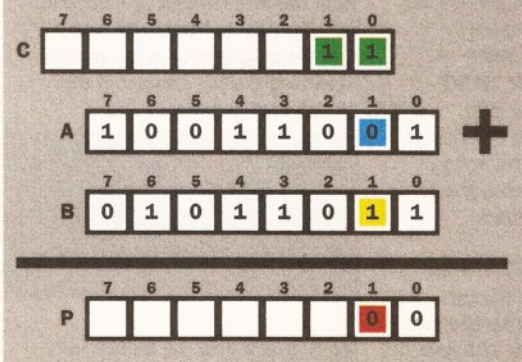
THE ONE-BIT HALF ADDER



INPUT A	INPUT B	OUTPUT P	OUTPUT C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

THE ONE-BIT FULL ADDER





INPUT A	INPUT B	INPUT C	OUTPUT P	OUTPUT C
0	0	0	0	0
0	1	0	1	0
0	0	1	1	0
0	1	1	0	1
1	0	0	1	0
1	1	0	0	1
1	0	1	0	1
1	1	1	1	1

the answer (this was the "units" column for the sum we performed using the half adder – remember that now we're working on adding the "twos" column and carrying to the "fours" column). So, we have two XOR gates that when combined will give us the first part of the answer. But how? Well, look back to the half adder that we've just used to add the first bit of the numbers A and B together. Here we needed only the one XOR gate to give us the least significant bit of the answer. But with the half adder we didn't have to take account of a third input (this is the "carry" from the previous column of our sum) and that's what the second XOR gate is used for.

The first of our XOR gates has two inputs, A^1 and B^1 – just the same as the XOR gate in the half adder – and this gives us the least significant bit of the sum $A^1 + B^1$. This output is then fed into the second XOR gate along with the input C^0 – the "carry" from the "units" position of the sum. You should be able to see from our discussion on XOR gates that the output from this second XOR gate will be the least significant bit of the sum $A^1 + B^1 + C^0$.

Now let's see what assembly of gates is required to calculate the most significant bit – this is the part of the logic diagram that's below the dotted line. With our half adder we only needed one AND gate – here we're using two ANDs and an OR gate. That's because we've now got the "carry" to take account of. Now the most significant bit of the answer will be 1 if the sum $A^1 + B^1 + C^0$ is greater than 1.

We can check whether this condition is true in two parts. Look at the top of the two AND gates. Its two inputs are C^0 and the output from the first XOR gate (the least significant bit from the sum $A^1 + B^1$). If both of these inputs are 1 then we'll get an output of 1. The second AND gate is used to check whether the sum $A^1 + B^1$, its two inputs, produces a most significant bit – this will be the case if both digits have the value 1. An OR gate is then used to combine the outputs of the two AND gates.

THE EIGHT-BIT FULL ADDER

Fine, so we've seen how to add the first bits from each of our two numbers using a one-bit half adder. We've also seen how we go about using a one-bit full adder to add the second bits of the numbers taking any "carry" from the first column into account.

Now it should be fairly easy to see that to add an eight bit number we can use a half adder along with seven full adders assembled in a chain. We've shown the logic diagram for just such an adder. If you check back to the logic diagrams for the XOR gate and the one-bit half and full adders, you should be able to see that the eight-bit full adder is actually made up from combinations of our three basic "building block" gates. To make the eight-bit full adder has required 22 OR gates, 30 NOT gates and 45 AND gates.

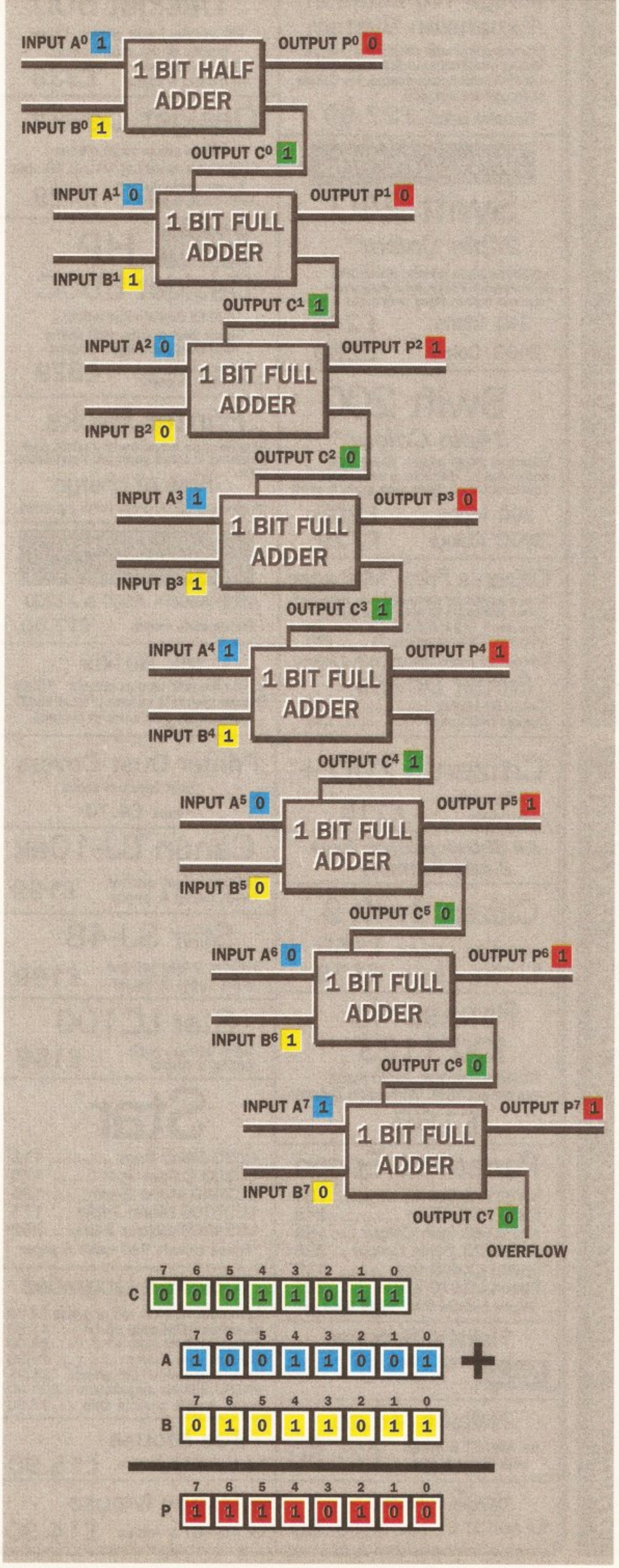
NEXT MONTH

Well, we've now seen how to add two eight-bit binary numbers. You should note that the chip set in the Amiga manipulates 16-bit or 32-bit numbers, but it follows exactly the same rules. The full adder for a 32-bit number is composed from a one-bit half adder and 31 one-bit full adders.

You should now have a good understanding of the basic principles that underlie digital logic and the workings of the micro-processor. Next month we'll go on to look at the way in which some of the other functional units within a chip are derived from similar simple logic gate assemblies. We'll be taking a close look at how subtraction is performed. If you want something to think about between now and then, consider how we could use our eight-bit full adder to help us perform the subtraction.

In the issue following that, we'll be going on to show you the functional arrangement of the 68000 chip, the various versions of which are at the heart of every Amiga. If you've always wanted to know everything about your machine but never dared ask, don't miss it! AS

THE EIGHT BIT FULL ADDER



THE BINARY SYSTEM

Our usual counting system is called base 10 or decimal. You begin counting items (or fingers) with 1, and when you reach ten items you have what could be regarded as one "set" or bundle of items. To represent this, you write a 1 in the second column from the right, the "tens" (or, if you like, "sets") column: one set plus no odd units = 10.

Now imagine that instead of counting fingers you're counting *hands.* When you reach two, you've got a "set" of hands, so you put a 1 in the "sets" column as before. This is the basis of the binary system. Instead of sets of 10, then 10x10 (hundreds), then 10x10x10 and so on, it uses sets of 2, then 2x2, 2x2x2 and so on. Two is shown in binary as 10, three as 11, four as 100 and five as 101.

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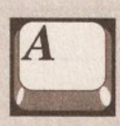
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AMIGA ANSWERS



SO WHAT DO ALL THOSE ICONS MEAN?


Beginners: this icon will appear next to any questions which are "basic" in content.


General: this icon is used for any general Amiga-related queries.


Caution: be sure that you fully understand the answer before trying it out.


Danger: the answer to this question could well invalidate your warranty – or you!


Hardware: this icon is used to denote questions relating to general hardware.


Buying advice: we use this icon if the question asks us for buying advice.


Printers: this icon denotes a query about printers, printer drivers and so on.


Technical: any queries about programming will have this icon next to them.


Video: this icon relates to any query about using your Amiga with video hardware.


Music: this icon is for questions about MIDI, sampling, synthesizers and so on.


Programs: any program-specific queries have this icon next to them.


Comms: if your question relates to comms, this is the icon that we'll use.

WHATEVER YOUR PROBLEM WITH THE AMIGA, WE ARE HERE TO SOLVE IT

That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with any technical questions you can throw at them. If they don't already know the answer to your problem, they will find it out for you.

We are prepared to deal with any problem you have with the Amiga, from general enquiries about AmigaDOS or Workbench, through questions about specific pieces of software and hardware, to advice on what you need to buy to do a particular task. If it's to do with the Amiga, we will help out. What we cannot do is offer this service over the telephone – do not phone us with your enquiries, but write to us at the address below.

We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but you'll just have to be a little patient and wait for it to appear in print. You won't get a personal reply even if you enclose an SAE with your letter, so please don't bother.

Send your question on the form below to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW.

The Amiga Answers panel consists of our consultant editors Mark Smiddy and Jeff Walker and the experts listed below. We will also be calling on the services of all our other contributors, so you won't catch us napping, whatever the subject of your query.

Each panellist will be dealing with queries in his own specialist area(s), so it would help us greatly if, when writing, you label your query envelope with the name of the expert who you feel can solve your particular problem.

Below is a list of areas of expertise. It's a list that we will add to and update every month, so you will know who to write to about any subjects not mentioned here.

Gary Whiteley – Video
Paul Overaa – Programming, music
Toby Simpson – Programming, hardware
Jeff Walker – Desktop publishing, printers
Mark Smiddy – AmigaDOS, business, hard and floppy disk drives
Jason Holborn – Public Domain, AMOS
Jolyon Ralph – Programming, hardware, CDTV
Dave Winder – Comms
Wilf Rees – Hardware, general
Gus Chandler – All the other bits and pieces

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Sorry, but we cannot personally reply to any questions – even if you include an SAE.

Name: ____________________

Address: ____________________

____

____

Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐ **A1200** ☐
A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine: ________

Kickstart version (displayed at the 'insert Workbench' prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.x** ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! ________

Total memory fitted (see AVAIL in Shell for 1.3 Workbench) ________

Chip memory available (see AVAIL in Shell) ________

Agnus chip (if known) ________

Extra drive #1 (3.5"/5.25") as DF__: Manufacturer ________

Extra drive #2 (3.5"/5.25") as DF__: Manufacturer ________

Hard disk: ___Mb as DH__: Manufacturer ________

Extra RAM fitted – type, size in Mb and manufacturer ________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 26

NO PROBLEM!

Every month our aim in the Amiga Answers pages is to provide definitive solutions to those tricky problems that have had you baffled. And, while this section is based firmly on solving individual readers' questions, we also seek to set each answer in a wider context – thus giving helpful advice to everyone with an interest in a particular topic. This means that even if you haven't sent in a particular query you need answered, reading Amiga Answers can be a very illuminating experience.

It's our use of a wide variety of experts to tackle your queries that makes the Answers pages as vibrant and informative as they are – and we've got lots of ideas that we'll continue to introduce over the next few months to make sure that Amiga Answers stays the most exciting and readable problem-solving section of any Amiga magazine. In the next couple of issues we hope to bring you more step-by-step walkthroughs to show you exactly how to solve a problem, more definitive overviews of particular problem areas, and many more surprises – as well as direct and to-the-point solutions to your queries.

So, who are these experts? They're all listed on the opposite page, and between them they cover just about every serious application that the Amiga has ever been put to, probably. (Well, if you know any different, we'd love to hear from you. Just send your CV to "I didn't know you could do *that* with it" at the usual address.)

Keep those queries coming, and remember: to someone who knows the solution, a problem is just a question that hasn't been answered yet.

Gus Chandler

Note: the symbol ↵ in listings means do not type a return – the line is simply too long for our narrow columns

COP A GENLOCK

I am a member of the South Wales Police Amiga Group. Together we have several A500s, an A500 Plus, an A600 and an Amiga 1500 with Kickstart 1.3 and 2 along with Workbench 1.3.2 and 2.

We wish to purchase a genlock which will be compatible with all our machines but which doesn't cost more than £150. We'd also like it to work with an Amiga 1200, since some of us are thinking of upgrading, though we're not yet sure this will be worthwhile until we see more details on compatibility.
Andrew Harris
Port Talbot

If you're only prepared to spend £150 between you, you have two choices – buy a RocGen Plus or a Rendale 8802. Spend a little more and you can get the 8802 with a fade and mode control (FMC) and still have change from £200.

As far as I can tell, the A1200 is an excellent buy, though it is inevitable that some of the older software will be left behind. What concerns me is that many of the old A500-specific peripherals will be left behind as well, since they just won't be compatible with the A1200. ***GW***

PRO PAGE PROBS

I have bought *Professional Page* 3.0 and have had nothing but problems since trying to install the system on to my hard disk. I have an Amiga 1500 running Workbench 2.05 and Kickstart 2, 1Mb of Chip RAM, a GVP 52Mb hard disk with 4Mb of Fast RAM fitted, and a Star SJ-48 printer using the EpsonQ driver.

The problems arise in three main areas:

(a) When running the program from its icon, after I have closed down all non-essential tasks (screen blankers, etc), I turn off the interlace screen and close the Workbench from the pull-down menu. I then call the *PageGenies* to create a page. The script runs OK until new text is entered at the prompt, at which stage the program crashes.

(b) When I'm printing a document using the Dot Matrix option, the requester appears, I select the options required, then it does one of two things. Very rarely it prints ever so faintly, or on other occasions the printing information box appears without the box and print information and then the program crashes.

(c) When I'm running the program from Workbench Management System, it crashes once it tries to load the "Fontengine.info" file.

The hard drive is virus-free, and the whole system has been checked by *Quarterback Tools*, which shows no defects with any program. I am told that *Professional Page* runs OK with 4Mb of memory, but a lot of reviews have said that it runs without trouble only with about 6Mb. I ran a friend's copy of *Professional Page* 2.0 on my system and it worked fine.
M J Farrar
BFPO

First, *Professional Page* 3.0 runs fine in 4Mb of memory – although you have 5Mb, remember, counting your Chip memory. I have talked to a (very) few people who have experienced a (very) few problems, mainly to do with printing to high-resolution dot-matrix printers (300–360 dpi) large documents that contain lots of CompuGraphic fonts, bitmap graphics, complex structured drawings, or some combination of these. These problems have largely gone away when they have expanded to 6Mb or more, but there's no doubt that *Professional Page* does not particularly like long documents with lots of graphics and fonts loaded, unless you have the memory to accommodate them. I'm talking about something like 30 A4 pages of text with 50 or so graphics loaded. This size of document might require even more memory than the standard Amiga 10Mb maximum, which will mean extra (and expensive) hardware to allow you to expand past 10Mb.

Having said that, though, I must say that none of these problems has resulted in the program crashing in the way you describe, although one or two have resulted in a "recoverable error" requester that won't recover.

Anyway, to your specific problem. I pulled the accelerator card and 32-bit RAM out of my machine and ran *Professional Page* 3.0 under exactly the same memory conditions as you do – 1Mb of Chip RAM , 4Mb of Fast. The difference is that I've got a Commodore A2091 controller and Fujitsu hard drive, and I'm using Workbench 2.04, not 2.05.

So, I loaded *PPage* from its icon, came out of interlace, closed Workbench, and created a page from a Page Genie. I re-booted and went through the process again for every Page Genie. They all worked fine.

After several frustrating hours of trying to make a Page Genie crash, I couldn't. Solid as the proverbial rock. I can only think that you haven't got *Professional Page* or Workbench set up correctly.

I know you've written to Gold Disk about this, and I bet they're sitting there scratching their heads like I am. The only advice I can give you is to go back to square one and install it all again – in fact it might be worth installing Workbench 2.05 all over again, making sure you use the proper Install disk rather than doing it by hand.

The printing crash, again, I cannot duplicate, and this tends to suggest that it is Workbench that is installed badly rather than *Professional Page*. The crash you are

continued on page 36

JARGON BUSTING • JARGON BUSTING

Chip RAM – the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally this was a maximum of 512k, but newer machines fitted with the fatter Agnus graphics chip can access 1Mb, enabling smoother animations and more screens to be displayed at once. The new A1200 comes with an Agnus chip capable of addressing 2Mb of Chip RAM.

Fast RAM – any extra memory which is not Chip RAM. The custom chips cannot access it, and because such accesses to Chip RAM can block out the central processor and slow down its own accesses, Fast RAM is therefore faster.

Genlock – a way of slaving one video source (say, an Amiga) to another (say, video tape) in order to synchronise their signals to allow stable wipes, mixes and effects including overlay between the two sources.

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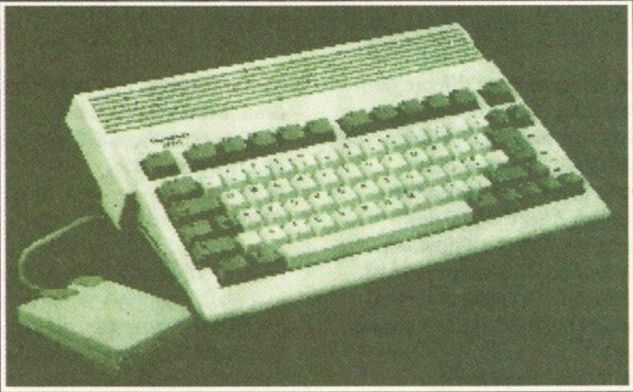
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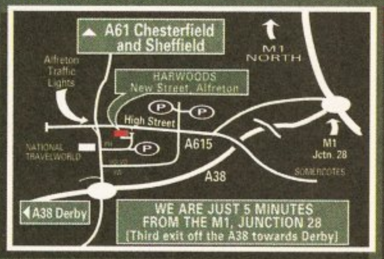
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continued from page 31

getting with Workbench Management System – which I believe is a shareware program that launches programs from a menu – is almost certainly down to a bug in that program.

Incidentally, the best driver to use with the SJ-48 and Workbench 2 is called "CanonBJ-EC" (the "EC" standing for Epson Compatible), and it can be obtained from JAM on 0895 274449. ***JW***

GETTING STARTED

Help! I've just bought a shiny new A1200 – the trouble is I have no Amiga home computer experience and am finding it very hard to comprehend Commodore's next-to-useless instruction manual. Please can you suggest either "An idiot's guide to the A1200" or "Workbench 3 for the under 5s"? That way you'll stop me drowning my sorrows in copious amounts of cheap beer and using this white box with a slot in the side as a doorstep.
John Essery
Ormiston
East Lothian

The book you want to get your hands on is called *The Amiga A1200 Insider Guide* (ISBN 1-873308-15-9), published by Bruce Smith Books at £14.95. It provides clear, easy-to-follow instructions on both using the Workbench and AmigaDOS on the A1200. You'll find a more detailed review of this book on page 86 of this issue. ***GC***

GIVE ME A ʻ

How can I get a reverse apostrophe in *PageSetter II*, and how can I speed up the printouts when using my Canon BJ-10ex? Is it correct that accelerators can do this, and if so, are there any cheap ones?
Bryan Morris
Ton-Pentre
Mid Glamorgan

The "reverse apostrophe" or opening single quotation mark is obtained by typing Alt-tilde – that's hold down the Alt key and press the tilde key (~). It's the one to the left of the number 1, directly above the Tab key.

Yes, the only way of considerably speeding up the printing of graphics (which is what a *PageSetter II* document is) is to buy an accelerator card. There are one or two cheap-ish accelerators which will speed the Amiga to about one and a half or two times its usual speed, but to make it faster than this you are talking about at least a 68030 accelerator with some 32-bit memory on-board. Count the fingers on one hand, multiply by one hundred, and that's about the minimum number of pounds it will cost you. Look through the adverts in this issue to get an idea of what's available. ***JW***

AMERICAN DREAM

I will shortly be going to America to work for a year and would like to take my A600 with me. If I buy a new PSU over there, will the computer work and will the software be compatible? Also what is the difference between fitting 1Mb of RAM to the trapdoor and 1Mb via the PCMCIA slot? Finally, do you know of any hard drives or accelerators for my machine?
Mark Nevell
Seaton
Devon

The power or voltage difference is not the only consideration: you also have to remember the US power stations generate a 60Hz signal as opposed to the 50Hz mains over here. Also, the American NTSC television standard is different from ours (200 lines as compared to 256), so your machine would not work on US televisions. It probably would work if you used a monitor, but most of the US software would only display 200 lines – if it worked at all. Given the prices of Amigas these days, it would probably work out cheaper to buy a new machine over there and sell it before you came back.

RAM in the trapdoor expansion on an A600 is mapped in as Chip memory, whereas RAM in the PCMCIA slot is used as Fast. Given the huge difference in price I know which one I'd go for – in spite of the slight technical differences. You can get a hard drive for your machine – the adverts in this issue should give you an idea of what's available, and we covered fitting a hard drive in *Amiga Shopper* 23. (If you missed that, turn to page 117 for our back issues service.) However, I haven't seen any accelerators as yet. No doubt someone will adapt an existing design if the market is there, although in light of the A1200, I doubt that it is. ***MS***

IS THE CANON ONE BETTER?

The Canon BJ10 driver supplied with Workbench 3 seems to work fine. Is there any reason to send off for the official Canon driver, and what advantages does it have?

In the BJ-10 manual there is a control code labelled "PS mode enable/disable". What does this mean? In my experience PS stands for PostScript.
Michael V Laheen
Hemel Hempstead
Herts

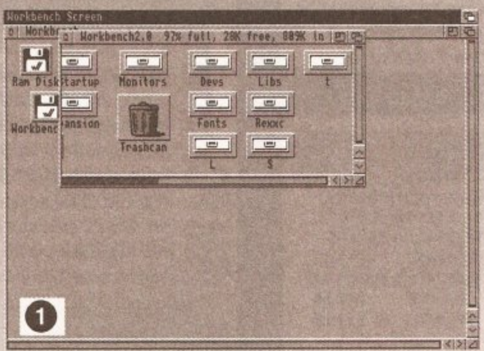
The official Canon BJ-10 driver comes with a Preferences and Font Download program. 'Nuff said? And PS, in this instance, stands for proportional spacing. (Cue sound of reader's palm hitting reader's forehead as the obviousness of it dawns on him.) ***JW***

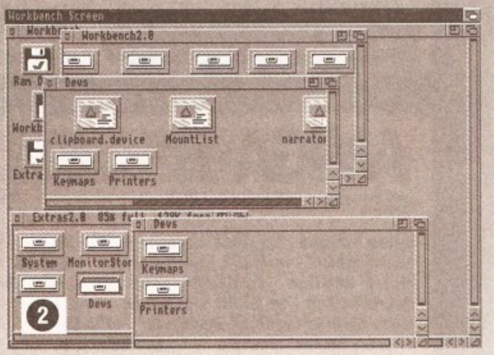
PERSUADING THE DRIVER TO CLIMB ABOARD

I have bought a Star LC-200 printer and am having trouble printing with it. If I try to print a picture of, say, Mickey Mouse, drawn and printed using *Deluxe Paint III*, what I actually get is a lot of strange characters. How do I set the computer to print drawings?
J Cain
Billingham
Cleveland

The simple answer is that you have to be using a compatible printer driver. This needs to be present on your boot disk in a drawer called "printers", which itself is inside a drawers called "devs". The easiest way to organise this is to always boot from your Workbench disk, and have the printer driver installed on that disk.

From the details you included with your letter I see that you have only the one floppy drive, so this procedure is going to seem a little long-winded, but until you buy a second floppy drive I'm afraid you'll simply have to live with all this disk swapping. This is what you have to do:





❶ Boot from the Workbench disk. Open the Workbench disk icon (double-click on it) and then select Workbench/Show/All Files – that is, select the "All Files" entry from the "Show" submenu which is in the "Workbench" menu. (If you don't understand how to select a menu entry I suggest you read your Amiga manual and master the basics before going any further.)

After you've selected Workbench/Show/All Files a drawer called "devs" appears in the Workbench window. If you can't see it, use the window's scroll bars to move around until you can. Now open the "devs" drawer; another window appears with some more drawers in it, one of which is called "printers".

❷ OK, now leave all those windows where they are, remove the Workbench disk and insert the Extras disk. Open the Extras disk icon and then select Workbench/Show/All Files again. A drawer called "devs" will appear in the Extras window. Open that drawer, and another window appears with some more drawers in it. Open the one called "printers". Inside this drawer is a load of printer drivers. Search out the one called "EpsonX", and drag it on to the "printers" drawer on the Workbench disk – that means place the pointer on top of the icon, depress the left mouse button and hold it down, move the icon until it is over the "printers" drawer icon, and then let go of the mouse button. (Make certain that you are not dragging the icon on to the "printers" drawer that is on the Extras disk!)

❸ At this point there will be some disk activity and you will be asked to swap disks. Simply follow

MONITORING THE OUTPUT QUALITY



Having bought an A500 Plus last November, I have quickly come to appreciate the graphic and sound capabilities of the Amiga range. Now with the advent of the A1200, with its increased graphics capabilities and faster processor speed, I am thinking of upgrading in the very near future. There are, however, a couple of questions I would like to ask:
1. What monitor would I need to get the most from the new display modes? Could I use a CGA monitor such as the Philips CM8831, or would I need to buy a multi-sync?
2. Would it be possible that future PC emulators for the A1200 would use full VGA mode – that is, 256 colours on screen? This would allow a lot more compatible software.
C McCallion
Co Donegal

1. You will get the ordinary modes with the Philips CM8831, but not the higher ones. The only way is with a multisync monitor. A little word of caution here: what are often described as "multisync" are really pre-set sync monitors, and not broad width frequency monitors.

Have a look at the Commodore 1960 (£527.58 – for enquiries, ring Commodore ☎ 0628 770088). This is a true multisync, and the quality of the display is outstanding – it certainly matches, if not beats, the best features of any of the competition.

2. What you say makes sense. Again the answer lies in the monitor. You will need a multisync. ***WR***

JARGON BUSTING • JARGON BUSTING

Accelerator – a device which includes either a central processor like the Amiga's or a more advanced one in the same range, but operating at a higher speed. An accelerator is useful for calculation-intensive applications, such as 3D rendering.

DTP – Desktop Publishing, the process of producing on a micro-computer documents that are intended for print.

Printer driver – a program that sits in between any application program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.

VGA – Video Graphics Array. High-resolution colour graphics system for the IBM PC. 80 columns by 25 or 50-line text and a huge range of colours – sometimes 256 (on-screen) at a resolution of 1,024 x 768.

LASER POSER



Having progressed through 1.2, 1.3 and 2.0 Amiga 500s with 9-pin and 24-pin dot-matrix printers, I now wish to upgrade to an Amiga 1200 or 3000 and a laser printer.

But through years of reading Amiga magazines I have gained the definite impression that there is no laser printer available that even remotely deigns to shake hands with an Amiga.

Could you please advise whether there is a laser printer that is fully compatible with an Amiga in that it is supported by a readily-available driver; is able to print in monochrome and colour at a resolution of at least 300 dpi; is able to support a full A4 page; supports popular programs such as *PageStream, Professional Page, Professional Draw, Final Copy, Wordworth, Deluxe Paint* and so on; and performs all its functions as if it were connected to a sympathetic PC.

Or must I shoot myself in the foot and buy a PC?
D M Shaw
Cranwell
Lincs

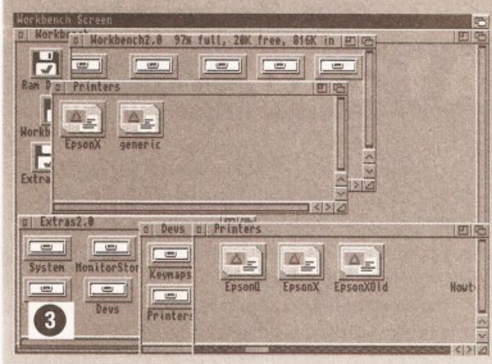
I can see how you might get that impression, but the picture isn't nearly so bleak.

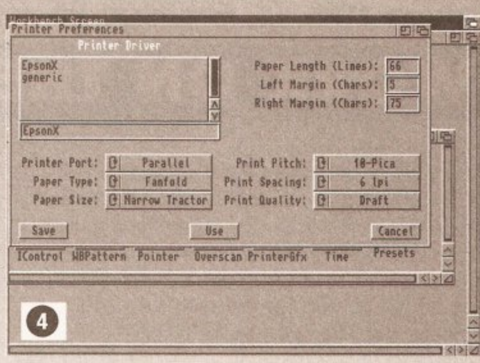
First, there are Amiga printer drivers and associated utilities available for Canon's LBP range of laser printers. Your local Canon dealer should be able to provide you with the Canon Drivers disk; if not, you can get it from Canon or from JAM (☎ 0895 274449).

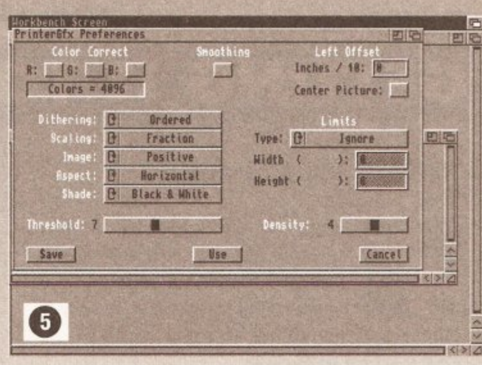
The problem with most other laser printers – as far as the Amiga is concerned, I mean – is that they emulate one model of Hewlett-Packard LaserJet or another, and the HP_LaserJet printer driver provided by Commodore on every Workbench release has been overtaken by new technology. There are several PD or shareware LaserJet drivers, and there have been a few commercial drivers, but none has ever provided a complete solution. However, there is now a printing package called *Studio* (available from JAM) that comes with an excellent standard Amiga Preferences LaserJet driver, which works with all LaserJets (and emulations), including the new 400 and 600 dpi ones, so this is no longer a problem.

Another thing to think about is PostScript. Workbench 2.1 and 3.0 come with a Preferences PostScript printer driver, so even packages that don't directly support PostScript output can now be used with PostScript printers.

But whatever laser printer you decide to buy, keep in mind that it'll need at least 1.5Mb of memory inside it to be able to image a full A4







the instructions that appear in the requesters.

When all the disk activity has finished you will have successfully copied a printer driver from the Extras disk to the Workbench disk. To double-check, open the "printers" drawer on the Workbench disk and see if there is an icon in there called EpsonX. (If you can't see any icons in there, click in that window and select Workbench/Show/All Files again.)

❹ Now you need to open the Prefs drawer on the Workbench disk and run the program in there called Printer. Use the file requester at top left to select the EpsonX driver, then click on Save. (Don't worry about the other settings for the moment – you can set those later when you understand a bit more about it all and have some reason to alter them.)

❺ When the Printer window has closed, run the PrinterGfx program, which controls how graphics get printed. You can leave the settings at their defaults for the moment, but take note of the Density slider at bottom right. This decides the resolution at which graphics get printed – Density 1 is the lowest resolution and prints fast, Density 7 is the highest resolution and takes longer. So choose a Density and click Save.

Now you can close all those Workbench disk and drawer windows and remove your Workbench disk. Insert your *Deluxe Paint* disk. (Don't boot from it, just stick it in the drive without resetting the computer.)

Open its disk icon and run the *DPaint* program. Load or draw your picture. Before selecting the Print option, remove the *Deluxe Paint* disk and insert the Workbench disk. Now select Print.

If you still get garbage, then it means the printer's dip switches are set incorrectly – check out your printer manual for details on this.

If you had two floppy drives all this would be a lot easier – you'd simply leave your Workbench disk in the internal drive and use the external drive for running programs and loading and saving data. Makes life much easier, really... ***JW***

page. If you think you'll be downloading lots of fonts to the printer, then 3Mb will be safer than 2Mb. Remember we're talking about memory inside the printer, not inside the computer.

One last point. You mentioned colour in your list of laser printer requirements. Colour laser printers (which cost lots and lots of money) are mainly PostScript printers, so a printer driver won't be a problem. ***JW***

I WANT BETTER POWER!



After consulting *Amiga Shopper* issue 14 I bought a Power Scanner. I am happy with the results when they're imported into *Deluxe Paint III* in med-res, but I am not happy with the printouts.

I have tried lightening the Power Scanner raw data, changing the Preferences Density setting and using both Grey Scale settings, and I have spent ages adjusting the *Deluxe Paint* palette. But the greys seem to print out either black or white. I would like to know:

(a) Am I expecting too much from my Star LC-10?

(b) How can I improve the printouts?

(c) Would buying a Canon BJ-20 improve things?

Tim Simonds
Weston-super-mare

(a) Yes.
(b) Buy, and use, a printing package like *Turboprint Professional* or *Flexidump*. There will be a definite improvement in output quality, but remember that a 9-pin printer can only do so much.
(c) Immensely, but you will still need to use a printing package to get better output because at the moment you are limited to the dither patterns and greyscale setting provided by Workbench Preferences, which are not particularly good. By far the best printing package to use with bubblejets is *CanonStudio*, available for £15 from JAM on 0895 274449. ***JW***

MYSTERY KEY

I've noticed that there is a "PrtSc" key on my A500 under the asterisk key on the numeric keypad. I do a lot of screendumps, so is it possible to use this key? I've tried every possible key combination that I can think of, but the key doesn't seem to do anything. Can you help? (Several Readers)

The "PrtSc" (short for "Print Screen") key doesn't work under normal circumstances. It's there to provide compatibility with the standard keyboard layout of an IBM PC compatible when your Amiga is running a PC emulator. Unless you've got an emulator fitted to your machine, I'm afraid the "PrtSc" key is pretty useless. ***JH***

PUT A 1500 ON THE AGA

I am the proud owner of an Amiga 1500 equipped with Workbench 2.04, a 120Mb hard drive and 3Mb of RAM. Despite the powerful specification of my machine, I'm worried that my machine may soon become obsolete with the arrival of the new A1200 and A4000 machines boasting true 32-bit architecture and the new AGA chip set.

My main interests are DTP, word processing, ray tracing and music. Considering that graphics programs are likely to make use of the new chip set, I was wondering whether it would be possible to upgrade my 1500 to the new chip set via a Zorro II card. Surely a 32-bit processor and the new AGA chip set could be squeezed onto a single Zorro card?

I'd also like to upgrade my machine's sound capabilities to 16-bit. Although current Amigas don't sport such capabilities, what's the chances of 16-bit sound appearing on the Amiga? If I do upgrade, will this give me the same sound capabilities as Atari's new Falcon?

Stuart Rimell
Dyfedd
Wales

Although no one has yet announced the release of an upgrade, rumour has it that such a board is in the pipeline. When I recently spoke to Kelly Sumner, MD of Commodore UK and the proud owner of the GamesMaster Golden Joystick (sic), he revealed that Commodore is trying to talk GVP into producing the upgrade. According to Kelly, producing such an upgrade would be relatively simple, although many techies that I've spoken to seem to disagree. Whether an upgrade does appear depends entirely upon its price – after all, who's going to pay half the cost of an A1200 to upgrade an ageing machine? Kelly wasn't even sure whether an A500 upgrade would appear – throughout our conversation, he continually referred to an AGA upgrade for the A1500, 2000 etc. I'm afraid it's a case of wait and see – who knows, perhaps the rumoured A2200 will eventually appear!

Although the current range of Amigas doesn't support 16-bit sound, Commodore has revealed that a DSP (Digital Signal Processor) upgrade will be released for the A4000 later this year based on AT&T's DSP chip. In the meantime, though, you could check out SunRize Industries' range of 12- and 16-bit samplers, the AD1012 and AD1016 – for details, contact distributor HB Marketing ☎ 0753 686000. For A500 users, Microdeal has recently released a very low-cost 16-bit sampler in the form of *Clarity 16* (£149.95 from Microdeal ☎ 0726 68020). We reviewed it last issue – turn to page 117 to order that issue if you missed it. ***JH***

BACK ON TRACK

I've recently bought a Zydec trackerball for use on my A600HD to replace the mouse. Is it possible to operate the trackerball through the Amiga's serial port, therefore dispensing with the need to connect anything to the side joystick/mouse ports?

B C Abraham
Paulsgrove
Portsmouth

Technically it would be possible to drive a trackerball through the serial port, but you'd need both an interface cable to mate the trackerball's 9-pin connector to the Amiga's 25-pin serial interface and

GETTING IT TO WORK ON THE A1200...

IS IT SAFE TO UPGRADE TO A 1200?

Since buying *PageSetter II* I have realised the limitations of my Amiga 500 and have been considering expanding by way of extra memory and either an extra floppy or saving up for a hard drive.

Now comes the Amiga 1200, with 2Mb as standard, a faster processor and 32-bit architecture, and all for less than £400. What do I do?

What I want to know is, if I buy an Amiga 1200 will all my existing equipment still work – things like my external floppy, my Star LC-200 printer, my Trilogic MIDI interface, and my Technosound Turbo sampler?

And if they do work on the Amiga 1200, will the files which I have saved to disk on the Amiga 500 be accessible to the new system?

Ian Heath
Upton
Wirral

The ports on the Amiga 1200 are exactly the same as those on all other Amigas, except for the additions of a PCMCIA (smart card) port and an internal AT-IDE hard drive interface, so all the equipment you own that plugs into those ports on the Amiga 500 will also plug into the 1200. Nothing that plugs into the Amiga 500's expansion port or trapdoor, or into the Amiga 500 CPU socket (like some accelerators and memory boards) will fit the 1200.

Software compatibility is a different question. The 1200 has a 68020 CPU and the new AA chip set. Now the 68020 shouldn't be a problem. Every Amiga application I know of runs fine on the Amiga 3000 with its 68030 processor, and thus should work with a 68020. It's possible, if the software hasn't been written properly – according to the Commodore guidelines, I mean – that it might become confused by the presence of the new chipset, in which case anything could happen from small glitches to wholesale crashes. But most software these days conforms to the rules, so the problems are going to be few and far between.

The editor says we will be publishing an Amiga 1200 software compatibility feature in the near future, although you'll appreciate it's going to take his slaves a while to check everything, so don't expect it next month.

As for data files, there's no problem at all. Data is simply data, and while the 1200 has a couple of extra features to its disk formatting that can speed up disk access, it will read OldFileSystem Amiga floppy disks as formatted on the 500, and FastFileSystem disks as formatted on the 500 Plus and 3000. ***JW***

A1200 KEYBOARDS

We have had several letters this month from new and more experienced users having problems with Workbench 3 on the A1200. The two main problems affect the Printer and Input preferences editors, which, on single drive machines, refuse to recognise the contents of the "Keyboards" and "Printers" drawers on the Workbench disk.

JARGON BUSTING • JARGON BUSTING

32-bit Memory – normally, memory on the Amiga is 16-bit. This means that when information is received by the processor from RAM, it is received in chunks of 16 binary digits at a time. 32-bit memory is sent in 32-bit chunks, thus increasing the speed of information transfer.

DSP – Digital Signal Processor, a chip dedicated to the manipulation of digitised sound signals. Because of its high processing speed and ability to perform complex mathematical operations, a DSP can add sound effects to samples in real time.

MIDI – Musical Instrument Digital Interface is a standard devised by electronic instrument manufacturers, allowing a number of synthesisers to be controlled by a single keyboard or sequencer.

Sample – A digital – computerised – representation of a sound.

also some custom driver software to control the Amiga's mouse pointer. Unless you're feeling particularly adventurous (not to mention intelligent), I think you're probably better off sticking with the joystick connector. That is, unless one of our readers can come up with the necessary routine... ***JH***

MIDI LINKS



I own a Yamaha Clavinova CLP123 and an Amiga A500 Plus. What inexpensive software and hardware could you recommend for linking the two together via MIDI?
Adam Boyes
Waterlooville
Hants

Hardware-wise all you need is a MIDI interface, and these normally cost between £20 and £50. Omega Projects (☎ 0925 763946) for instance offers a unit called the Mini-MIDI that costs £19.95, includes LED status indicators, and comes complete with connecting leads.

As far as cheap sequencing software goes there are a number of possibilities. I don't like *Music-X* but since it is now possible to get some versions (such as *Music-X Junior)* for as little as £20 this does provide one low-cost entry path. Gajits' *Sequencer One* is another possibility – the program was actually given away with issue 30 of our sister magazine *Amiga Format* back in January 1992, but that issue is no longer available; however, you can still buy the program from Gajits ☎ 061 236 2515. While you're at it, you could take a look at *Overture* (£79 from Desert Software ☎ 051 430 7400), *Rave* (£49.99 from The Software Business ☎ 0480 496497) and *Trax* (£70 from MCMXCIX ☎ 081 963 0663). These have different facilities and different approaches, but one of them might be just what you need. ***PAO***

BJ-10EX ITALICS



I have version 3 of the Canon BJ-10 printer driver, and am using it with my BJ-10EX with *TextPlus* 2 and *TransWrite*. The problem is that when I print anything using *TextPlus* I can't get italics, and when I'm using *TransWrite* garbage is printed.

I've read the driver documents, and the dip switches are set correctly. Do you think that version 3 of this driver has a bug? Or is it incompatible with my CDTV?

Lastly, can you recommend a good word processor that will be able to access all the features of my printer?
Mark Smith
Liverpool

The BJ-10EX contains two emulations, IBM and Epson. The IBM emulation, which is the mode that is used in conjunction with the Canon BJ-10 driver, does not contain an italicised character set, which is why you can't print them. To get italics you'd need to switch the printer into Epson mode and use the EpsonQ printer driver provided on the Extras disk.

TransWrite is printing garbage because it is using the incorrect printer driver; it's probably set up to use an Epson driver, and the printer is in IBM mode.

The two best word processors for supporting printer features like internal fonts are *Protext* (£80 Arnor Ltd ☎ 0733 68909) and *Wordworth* (£129.95 Digita International ☎ 0395 270273). The latest version of *Wordworth* requires 1.5Mb, so you'd need to expand your CDTV's memory; *Protext* requires 1Mb and should run without problem. ***JW***

LOST TV LINES



After replacing a Philips SCART TV with a CM8833 MkII monitor I found that a lot of software (though mainly games) leaves a two-inch black strip at the bottom of the screen. I have tried to adjust this using the screws at the rear of the monitor but the picture just ends up horribly distorted.

Many programs – for instance, *Wordworth* and Workbench – use the whole screen. All the advertising shots of the monitor show a full-screen display. A phone call to the suppliers drew a blank – they did not know themselves what the problem might be. I am using an Amiga 500 Plus. Do you have any suggestions? Is it normal to have a reduced screen picture or is there a problem with my monitor or Amiga?
B Bird,
Belchamp St Paul
Suffolk

If I follow you correctly you are saying that it's only some games which cause the picture loss at the bottom of the screen, and that all of your other software works correctly. If this is so then both your Amiga and monitor are OK and the culprits are the particular games you are using.

Since the Amiga is an international machine which crosses the boundaries of different television display standards, you will sometimes come across programs which are produced for sale in the US (which only has 525 lines in its

There appears to be a bug in these editors which manifests itself in the editors misreading the real **PRINTERS:** and **KEYMAPS:** assignments when you change between the Extras 3.0 and Workbench 3.0 disks. The solution is thankfully quite elegant, although it does require some modification to the Startup-sequence – so only work on a *copy* of your Workbench disk.

Boot your machine and follow these instructions.

❶ Double-click on the icon marked "Shell" – you'll find it in the System drawer. The Shell window opens with a prompt like this:
`6.Workbench3.0>`

❷ This means the Shell is ready to accept your instructions. Type the following carefully and press Return or Enter at the end of the line:
`ED S:STARTUP-SEQUENCE`

❸ This opens a simple editor program which is supplied as part of AmigaDOS. The instructions on your screen are a list of AmigaDOS instructions that the machine executes every time it is switched on. Don't worry about what it all means, just press the down arrow key until the little blue box (the cursor) is at the start of the following line:
`Assign >NIL: PRINTERS: DEVS:Printers`

❹ Now move the cursor right until it is one space past the end of the line. <Shift-Right Cursor> has much the same effect. Once you've done that, enter this:
`PATH`

So your line now looks like this:
`Assign >NIL: PRINTERS: DEVS:Printers ↵`
`PATH`

❺ Move the cursor back to the start of the line and down to the line that reads:
`Assign >NIL: KEYMAPS: DEVS:Keymaps`

❻ Follow the instructions at Step 4 until the line reads like this:
`Assign >NIL: KEYMAPS: DEVS:Keymaps PATH`

❼ Hold down the right mouse button and select **SAVE** from the **Project** menu – your Workbench disk must be write-enabled to do this.

❽ Re-boot the machine and you should now find the problems have been solved.

Technically speaking this bug-fix creates a non-binding assignment which must be read every time the relevant preferences editor attempts to read either **PRINTERS:** or **KEYMAPS:**. Since **DEVS:** is already bound to **SYS:Devs,** this means that any reference to the assignment always forces a read from the boot disk. Phew! This was not caught during the testing phase because Workbench 3 was really meant for hard disk or at least dual floppy drives. Fortunately you don't have to understand how this works in order to be able to use it. My thanks to a local Dixons for the use of their machine. ***MS***

NTSC standard TV sets) but which also turn up in the UK (where our PAL TV standard has 625 lines). Rather than rewrite the software, which, as you say, is usually a game, the program is released as is, resulting in the black area you describe.

Even so, you should count yourself lucky: all the original software for the first Amigas was entirely in NTSC format, which made producing graphics for video something of a nightmare. At least most programs are now released in PAL format as well.

Learn to live with it, secure in the knowledge that everything but the software is OK. Alternatively, you could try using a program such as *ModeSwitch* to force the Amiga into NTSC screen mode to give a "full screen" display when necessary. Ask for it from your favourite PD library (or choose one from the adverts in this issue). ***GW***

GRAB A 1200

I have a long-running hobby, photography. To help me with this I have an Amiga 500 for which I recently bought a *Vidi-Amiga 12*, which is very good except that the software seems to crash if you even sneeze!

I have been very impressed by the spec of the new A1200, but have not yet been able to see one. I've been in Dixons several times and I actually finally found a salesman who seemed to know what he was talking about. He told me that he had a 1200 and that his older *Complete Colour Solution* would not run on it because of hardware problems. He said that it would work if you held down both mouse keys on start-up to revert to the old chip set. I'm confused by this – surely the 1200 doesn't have both chip sets on board?

So, considering that one of the binds with digitising (and I do a lot) is the time it takes to perform the various tasks:

1. If I buy a 1200 will I still get the advantage of the more rapid processor even if I have to employ the mouse button trick?

2. Will the 1200 and *Vidi-Amiga 12* be compatible? I have written to Rombo but await their reply.

3. Will my other peripherals (Citizen Swift 24 printer and Power external disk drive) work with the 1200?

Paul Broadbent
Scunthorpe
Humberside

Check the *Vidi-Amiga 12* software you have – it sounds like you have an early version. When I tested the *Vidi-Amiga 12* last year, Rombo sent me the wrong software by mistake, and I had the same trouble. The new version works fine – contact Rombo if you need to upgrade.

You're right, the A1200 doesn't have both chip sets on board – the mouse button trick is used to emulate the old ECS chip set, to maintain a degree of backward compatibility with some older software.

Although I haven't had the chance to try a *Vidi-Amiga 12* on a 1200, I see no reason why it would not work. The 68020 processor will certainly help speed things up, but you should consider adding more memory for the best speed increases, because this will free up the 2Mb of Chip RAM to get on with its own business, rather than sharing with any process which wants its attention.

Your printer and disk drive should work perfectly with the A1200. ***GW***

JUMPING GENLOCKS!

I've started doing video titling with *Scala 500* and a *Rocgen Plus*, but when I try to import graphics or use text they seem to jump up and down about one-sixteenth of an inch. I suspected interference from something, so to try to solve this I have bought proper screened cables, but I still have the same problems. Also, the colour of the video flashes from black and white then back to colour, but it's OK if I just transfer it between my two videos without using the genlock – which isn't much good if overlaying is to be achieved. By the way, the genlock is placed next to the GVP hard drive connected to my Amiga 500.

T M Beal
Ripon
North Yorkshire

First, try relocating the genlock. Second, try using an external power supply to drive the genlock – the Amiga 500's "brick" might not be powerful enough to drive the extra floppy drive and hard drive you have connected to your A500 in addition to the genlock.

Then try using the best-quality video tape you can lay your hands on – preferably something recorded commercially – for playback. Check for the colour problems again. Make sure that the video is playing and connected to your genlock before you boot up the Amiga – this can sometimes make a difference.

If all else fails, the unit may be faulty or misaligned, in which case you should consider asking for a replacement or repair. ***GW***

JARGON BUSTING • JARGON BUSTING

Digitiser – A device which takes the analogue information from a source such as a video camera and converts it to digital screen information for use by a computer.

Emulator – A piece of software or hardware that enables programs written for another machine to be used on the Amiga.

NTSC – National Television Standards Committee. This is the name for the TV colour-coding system used in the USA and some other countries. It has 525 lines, running at 60 fields and 30 frames per second.

PAL – One of the main TV colour coding systems, this is in use around the world and was developed in Britain. PAL refers to Phase Alteration Line. In fact, there are several hybrid PAL systems in use, all of which are slightly different.

FLIPPING LINEFEEDS!

On my Amstrad DMP-3000 printer one of the dip switches sends a line feed as well as a carriage return. Is there any way I can stop the Amiga sending linefeeds to the printer? I use the printer with my BBC Micro as well (via a data switch) and do not want to keep changing the dip switch settings.

Mike Bates
Northwich
Bristol

Theoretically it would be possible to write a printer driver that did not send any linefeeds it received, but writing an Amiga printer driver is something only an experienced C or Amiga machine code programmer could do.

The short answer, Mike, is you'll have to keep flipping the switch. Unless you can find some way of getting the BBC Micro to send linefeeds...? ***JW***

TAKEN TO PC TASK

Way back in *Amiga Shopper* 19, we featured various emulators you could run on your Amiga, including one called *PC Task*. Several readers have written to say they haven't managed to track this program down. A demo version of *PC Task* is available on Fish disk 643 from good PD libraries – we got ours from 17 Bit Software ☎ 0924 366982. Details of how to get the full (shareware) program are on the Fish disk, but if you want to go straight to the author, we can reveal that he is one Chris Hames. The bad news is that he lives in Australia, but if you really want to, you can phone him on 010 613 802 8513. (Do remember though that Melbourne is nine hours ahead of British Summer Time, so 9am here is 6pm there, and suddenly remembering you meant to ring Chris just as you're heading home from work, at 5pm BST, is not going to get you the friendliest of responses.) ***WR***

MORE SPEED! MORE SPEED!

I currently own a 1.3 Amiga 500 with 1Mb, a second drive and an Epson LQ-800 printer, although I am thinking of buying a Canon BJ-10ex bubblejet.

I have realised lately that I am going to need to get more memory in order to use CompuGraphic typefaces and bitmapped graphics in my work. But I am also getting a bit fed up with the time it takes to output this work to the printer using *PageSetter II*. I am in the process of getting *PageStream* and *Final Copy 2*.

There are three roads I can go down as far as upgrading the memory is concerned. The first and simplest is the 1Mb board fitted into the trapdoor expansion slot. Then there are the external units that plug into the expansion port on the left-hand side of the Amiga. Lastly there's the board that fits internally into the 68000 CPU socket.

Money is tight, so I need to make the right decision. Which upgrade will improve the output speed of the machine? And if none of them will, which road should I consider going down?

Mike Bird
Nailsea
Avon

Fitting any extra memory will increase the speed at which the program operates and the speed of printed output only very slightly. The speed increases are due simply to there being more memory available, so the program doesn't have to keep grabbing and giving back to the system little bits of memory; instead it can grab a great big chunk and get on with it. This operation isn't hugely time-consuming anyway, so purely from a speed point of view, no memory upgrade is going to make that much difference.

continued on page 44

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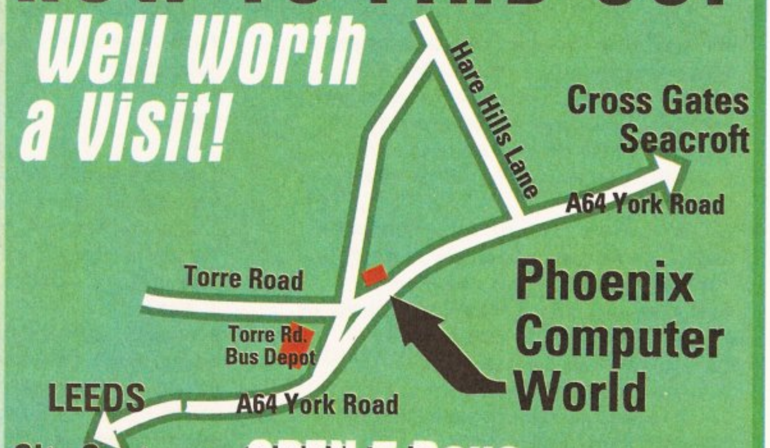
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continued from page 40

The speed of dot-matrix printer output is essentially governed by two things: the physical speed at which the printer's print head can move backwards and forwards, and the speed at which the central processing unit (CPU) can create and transfer the data to the printer. The only way to get your printer to print much faster is to fit a faster CPU – an accelerator board in other words.

Rather than start looking at accelerator boards for your Amiga 500, I think you might be better advised to check out the new Amiga 1200, which (apart from the new sexy AA chipset) has 2Mb Chip RAM as standard and a 68020 CPU, and runs about five times faster than the 500. ***JW***

SCREEN SIZE SIZZLER



I recently bought *DPaint IV* and I've had some initial problems which I never experienced when using *DPaint III*.

I normally use a lo-res, 32-colour, standard overscan workscreen, but when I tried this with *DPaint IV* (v4.1) on my AmigaDOS 2.0 Amiga 500 Plus, I had to move my Workbench preferences up and to the left, losing quite a bit of the Workbench screen off the top of my Philips monitor. I also have to implement *Toollimit* because I lose the toolbox and anim control panel.

I've got around the problem for now by booting from a copy of *DPaint IV* with adjusted preferences, but I'm soon going to be buying a hard disk and want to install *DPaint IV* on it. If I do, what will happen to my screens (especially *DPaint's)* when I try to work in overscan, as per usual?
Dave West,
Sunderland
Tyne and Wear

I spoke to the people at Electronic Arts, the makers of *Deluxe Paint IV*, about your problem but their reply was something along the lines of "Yes, it does that for us too, now you come to mention it", which really wasn't much help. It was also suggested that you use the Control-Cursor Key trick to scroll the screen around, but this doesn't solve the problem, at least not in my experience.

I've tried everything I could think of to help you but I believe this problem to be caused by *Deluxe Paint* itself. It would certainly help if the Animation Control panel had a drag bar on it, so it could be placed elsewhere on the screen. The easiest way around this particular problem is to use the hot-keys instead of the control panel to control your animation creation.

Be glad that you normally work in lo-res. The toolbox problem is even worse with hi-res, at least on my setup – the whole thing generally splits into two and the screen itself has to be physically moved by holding down the left Amiga key and dragging the screen with the mouse.

As you say, this trouble only occurs in overscan situations, and I must admit that I've spent hours myself trying to figure it out, playing with the Workbench Overscan settings and getting completely frustrated. In the end I just tend to leave everything at Default settings, which usually seems to be the most satisfactory.

Incidentally, were you aware that various settings can be saved and re-loaded for Overscan and also several other Workbench 2 Preferences settings? This means that you just have to load the one you need for a certain job and revert to the defaults when you've finished. Try holding down the right mouse button and you'll see a "Save As" gadget while the Overscan Prefs window is active. The resultant files can be run just like any other program and switch your Workbench back to the settings saved in the file. ***GW***

NAME YOUR PREFERENCE



How can I copy my Preferences settings from one disk to another? The 1.3 Workbench I have used previously just contained a single file – System-configuration – but it seems this is no longer enough. I have read through the manuals supplied but it seems to assume you only ever boot from the Workbench disk. The main things I wish to change are the palette colours and the mouse movement speed.
Neil Strotton
South Norwood
London

You're quite right, Preferences have changed a lot – but this has been to give Workbench more power than ever before. The original "system-configuration" file was an extensible structure to which other settings could, in theory, be added. However, as is often the case, the designers went a bit overboard and replaced this file with a set of more logically designed preference forms – IFF files in fact.

The IFF standard does allow for several forms of different types to be merged into one (FORM CAT) but for some reason Commodore's designers kept each file separate. The preferences settings are managed differently too: in Workbench 2+ a special system "daemon" or background manager process called **IPrefs** looks after everything and makes sure all Workbench programs get to know what's going on. So in other words,

THE ANSWER IS... MULTISYNCHRONICITY



I have just upgraded my trusty A500 Plus to one of these new-fangled A1200 jobbies and I have a few queries regarding which monitor (or monitors) to use for the best results. I use my Amiga both for games (OK, I admit it!) and for DTP *(Pagestream)*, WP *(Protext)* and generally as a hobbyist in all sorts of Workbench-launched utilities.

I want to be able to display the best screen resolution I can for the above applications while still being able to access the standard screen modes for games. I understand that the Commodore 1950/1960 multisyncs are ideal, but having seen dozens of adverts for SVGA types the Commodore option does seem prohibitively expensive. So here is what I want to know:

1. Can I use one of the garden-variety SVGA 0.28 pitch multisyncs to obtain Super Hi-res / Productivity screens without any special equipment and, if so, do I have to look out for any particular specifications to ensure compatibility with the A1200?

2. Is there a cheaper alternative to the Commodore monitors which will give the full range of screens available?

3. If, as I suspect, I can use an SVGA for the "serious" stuff but need my Philips 8833 Mark II for the standard screens, can you give me a simple schematic diagram for wiring up a switch box to allow a changeover between monitors?

I know I should probably be able to work this lot out for myself but I am at a loss with the A1200 manual which rabbits on about things like Euro36, Euro72, Super72, DBLNTSC, DBLPAL, etc – all of which seem like marvellous things, only I haven't got a clue what they are, except maybe some kinds of monitor which are presumably available somewhere on this planet if you know what to ask for.
Peter Clark
Wigan
Lancs

1. You can use an SVGA monitor, but you'd be well advised make sure you get one which is able to sync down to 15.6Hz so that you can also use "normal" Amiga modes when necessary – which happens to be exactly what the Commodore 1960 is able to do.

2. Actually, you'll find that if you want all the various Amiga screen modes, then the 1960 is in fact one of the cheaper alternatives around and can be found for less than £360 if you take the trouble to shop around.

3. Of course you could use your 8833, but if you buy the right multisync you won't need to – so you could sell it or keep it for backup. As for wiring up a switch box, I'm afraid I can't really help – I don't know what you wish to wire to what, and how. The possibilities are too complex for a simple answer.

Finally, I too tried to make sense of what the Commodore A1200 manual has to say about the new display modes. Clear as mud, isn't it? The upshot is, however, that Euro 36, Euro 72, Super 72, DBLPAL and DBLNTSC are all types of screen mode – not types of monitors, though I understand your confusion since they are referred to as Monitors in the manual. Depending on the chip-set installed in your Amiga (in your case the AA set) and the "Monitors" present in the Devs/Monitors drawer, different options will be available for selection from the Preferences ScreenMode requester. Selecting a new monitor will change the Workbench display of your Amiga, but all programs which use custom screens and are capable of multi-tasking will still display in their usual way. So the front Amiga screen is the one which actually governs the output frequency.

Actually, the "Monitors" are really small programs which "drive" the different displays. For instance, Super 72 produces a 72Hz Hi-res or Super-Hi-res display based on the ECS chip set, while DBLPAL is a VGA-equivalent display running at around 30Hz (for flicker-free viewing) on the AA chip. ***GW***

JARGON BUSTING • JARGON BUSTING

RAD – A portion of the Amiga's memory set aside to act like a disk drive. The advantage is that access times to RAD are much faster than to a floppy or hard drive. The contents of RAD are retained if the machine is re-booted, but not if the power is switched off.

RAM – Random Access Memory, so called because any part of it can be accessed immediately, rather than having to search through from the start of memory to the point of interest. RAM is used to hold programs while they are being executed and temporary data. The contents of RAM are lost when the power is switched off.

Startup-sequence – A program which is executed every time the Amiga is switched on and after every reset. It sets up the system so that it is usable from Workbench, and may be customised by those who have unusual hardware or software requirements.

you can't just stick a 1.3 System-configuration file on a bootable disk and expect it to work – sorry.

It can be done, but you will need at least a minimal Startup-sequence. The following should suffice.

```
C:SetPatch >NIL:
C:MakeDir RAM:ENV RAM:ENV/Sys
C:Copy >NIL: ENVARC: ↵
  RAM:ENV ALL NOREQ
C:IPrefs
```

You will also need to create the appropriate Preferences drawer on your new disk and add the C directory and commands outlined above. (You can do most of this by copying a working Workbench disk. It is important to note, however, that you should not place an old-style system-configuration file on the new disk.) Copying the actual preference settings files is not quite as difficult as you might imagine since AmigaDOS can look after creating all the necessary directories for you, like this:

```
1>RESIDENT C:COPY
1>COPY SYS:Prefs/En#?
RAM:Prefs all
1>COPY RAM:Prefs/En#?
DF0:Prefs all
```

In this example, I have assumed that you have a single disk drive and are using the RAM disk as a buffer. You should note that AmigaDOS 2 and higher automatically make a new assignment, **ENVARC:**, which points directly to **SYS:Prefs/Env-Archive.** It is possible to copy just the preference manager files you want to use, but this is not a good idea – they don't take up much room. ***TS***

OUT OF STOCK ANSWERS

In early November I ordered a copy of *Professional Calc* from the cheapest advertiser I could find. I rang them several times over a three-week period but got the same answer: they were waiting for delivery. After four weeks waiting I cancelled the order and tried in vain to find someone who could supply it. I contacted the distributors, Silica, but drew a blank there too. Could you tell me:
1. Why do so many dealers advertise a product they cannot supply?
2. How can a product so extolled by so many publications as the best, be so considered when it is not generally available?
3. Is there anyone out there who has a copy for sale?
Richard Bancroft
Bridlington
Humberside

1. I do sympathise, but dealers are just a link in a large chain. Software disks and manuals are usually manufactured by specialist duplicators and printers, and usually packed by another company. After that they are shipped out to distributors, who in turn ship packages to the dealers. The chain is very fragile and if someone early on does not anticipate the demand correctly, there will be a shortfall. This can be exacerbated if the manuals get held up at the printers, for instance. In the event, such delays are unusual but they do happen – especially when a package outperforms its projections. As far as the advertising is concerned, a dealer must book an advert months in advance, assuming that the distributor can supply it in sufficient quantity. If it does not, someone else will get the sale instead. This usually works very well, but when the situation just described occurs, the walls come crumbling down.
2. *Professional Calc* is the best spreadsheet currently available for the Amiga, and the magazines are quite justified in their findings. Reviewers can only report what they see of an application – good availability is assumed when it comes from a large and respected house such as Gold Disk. We do tend to be a little more restrained when something arrives from a company with no track record, but this is not the case with *Pro Calc.*
3. No-one that I could find had a copy. At least one of the larger distributors told me they had not had copies of *Pro Calc* for some time, even though it had sold in large numbers. Your best solution in the short term at least would be to consider something similar such as *Advantage* or *Office 2* – both from the same stable; and at the time of writing, *Office 2* is very good value for money. ***MS***

LITTLE RAD

I have created my own Workbench disk using only the barest minimum to load. Is it possible to make this disk boot from RAD on a 1Mb machine?
Tim Williams
Trenwydd Park
Gwent

With such a small amount of memory in your machine (1Mb seems a lot, but it isn't really), using RAD would probably be impractical. However, a little experimentation never hurt anyone. The first thing to do is decide how large RAD is going to be. A standard 880K RAD boot disk is impossible because you probably won't have a large enough free space in the memory map – to do this you need at least 2Mb installed.

To discover how much space you need to allocate to RAD, use the INFO function from AmigaDOS to find out how much space is used. Dividing that number by 22 will give you a value for **HiCyl** in RAD's **Mountlist** entry. If the "used" value was 1,000, then enter this:

```
1>EVAL 1000/22
45
```

and set **HiCyl** to 45. The following calculation will give the effective size of the RAD disk – so you can check how much RAM will be allocated to it:

```
1>EVAL 45+1 * 11
506
```

In this example it is 506K – the less the better.

Now you need to add some extra lines to your Startup-sequence:

```
ASSIGN RAD: EXISTS
IF WARN
  ECHO "Copying boot disk ↵
     to RAD:"
  MOUNT RAD:
  COPY SYS: RAD: ALL
ELSE
  ECHO "Booting from RAD:"
ENDIF
```

Finally, in order to get the machine to boot from RAD you need to add a line to RAD's **Mountlist** entry:

```
BootPri = 6
```

This should place RAD above all other disks in your system, although I have to admit this has been something of a nemesis to me: RAD always defaults back to a boot priority of 0. Provided you don't have any auto-booting hard disks and there is no disk in **df0:** the machine should now boot from RAD. ***MS***

EARLY LEARNERS

I have just bought an Amiga 1200 and am a little confused by the options on the "Early Startup Screen". Can you explain the following:
1. Under "Boot Options", what does "Disable CPU Caches" mean and what effect will it have on any software?
2. On "Display Options" under "Chip Type" there are three selections: "Best Available"; "Enhanced" and "Original". What are these?
3. Why or when would I use the option "Boot with no Startup-sequence"?
Billy Swift
Wolverhampton
West Midlands

1. In normal circumstances, every CPU (Central Processing Unit) uses something called the "fetch-execute" cycle. Every instruction that is executed is first "fetched" from memory, then "executed" inside the processor. The program counter is incremented, the next instruction is fetched and the process continues again. Fetch cycles take time because the processor has to load the instruction's address on the bus, wait for a valid memory address and load the instruction.

The 680x0 series of processors have the ability to load a certain amount of program code and data into internal memory. This memory is physically inside the CPU chip and does not reside in normal RAM. Such memory is called a cache. (The size and type of cache available depends on the processor installed – the 68020 has smaller instruction and data caches than the 68030 and 68040.) When code is executed, instructions stored in the cache are executed at great speed because there is no need to "fetch" them from memory. This system results in a great increase in speed for certain types of code, especially short loops such as memory transfers. Software sprites come under this heading, even though the blitter is usually used in preference.

This is all fine in theory, but some programmers use a technique

called "self-modifying code" – code that changes itself as the program runs. It's actually simpler to implement than it sounds and is used to gain speed over traditional methods. However, in order for this to work, the code must be located at a *known* address in memory. Once a program is executing in the cache, it cannot be modified because it does not exist at any physical address. Besides which, the CPU does not have instructions to address memory inside the cache directly. Therefore, self-modifying code does not work and the program crashes in a spectacular fashion.

Despite Commodore's best advice, some programmers still insist on using self-modifying code. It works on the 68000 because it only has a one word pre-fetch, but it will crash a machine using a higher processor. Turning the caches off should prevent this from happening, although it will slow down some software, so this should only be used as a diagnostic measure. The same effect can be gained through the AmigaDOS **CPU** command, but the Early Startup screen is much simpler to use.

2. These options are available to enable your machine to emulate less-advanced screen modes so that it can run software designed for earlier Amigas. "Best Available" will select the AGA chipset (the A1200's Advanced Graphics Architecture), "Enhanced" should emulate the early 1Mb Agnus, and "Original" will emulate the 512K Agnus. I tried this on an A3000 with soft-Kickstart 3.0 and on this system, all the low-level system commands still recognised the 2Mb Agnus. The only visible difference is that the newer extended modes such as Productivity and Super-Hi-Res are not available in "Original" mode. This setting therefore only seems to affect Intuition's available modes – which, to be frank, seems a little pointless.

3. This option is an extension of the infamous "Ctrl+D" keypress, used during Startup to halt the Startup-sequence script. Early systems open Intuition, a Workbench screen and the default CLI immediately a boot disk is recognised. Ctrl+D only works when the CLI window is open and from Kickstart 2.0 the default CLI window does *not* open until **IPREFS** has started late on in the startup-sequence. If you need to over-ride the default startup, this option has to be used instead: it opens a default Workbench screen and initial CLI window (actually, it's a Shell from Workbench 2). Generally speaking, this option is reserved for use by experts who are used to using the Amiga at AmigaDOS level. If you do not find yourself in this category, leave this option – as well as the others – well alone. ***MS***

HARD CASE

A **My Amiga 1200 came with a hard disk installed, formatted and partitioned. I do not have any partitioning software because none is supplied with the machine. Could you help with the following:**

1. Is there any software on the five Workbench disks supplied with the machine that can partition a hard drive? If not, could I get such a thing from Commodore or is there any PD software that will do the job?

2. Can I just partition a hard drive or would partitioning involve reformatting?

3. The A1200 comes with a flicker fixer but this does not seem to work with the 1084S monitor. Do I have to buy a VGA monitor to make use of it?

4. A small amount of the software I have does not work with my new machine. Holding down the two mouse buttons to get the Early Startup control screen only seems to help with screen display problems. Is there anything I can do that would get *PageSetter II* to work, or will I have to buy another DTP program?

5. Will a DTP program such as *Office Page* use the same outline fonts that Workbench 3.0 uses?

6. I realise there is something called ARexx on the Workbench 3

CODE CLINIC

CODE CLINIC CODE CLINIC

TOBY SIMPSON DEBUGS A READER'S DEBUGGING PROGRAM

Program Name: **file checker**
Language: **C**
Author: **Dave Thurston, Hatfield**
Program purpose: **To aid debugging**

This month's bug highlights one of the biggest problems programmers have: debugging. The bug itself was quite simple to fix – I simply changed a number from 128 to 129, and the bug vanished. The program in question was written in C, and the programmer had simply forgotten to take into account that any string contains its characters followed by a zero at the end to terminate it. Consequently, the zero went off the end of the allocated memory for the string and produced strange varying results.

It was somehow ironic, however, that the author of the program had generated it to help debug his own software! He had the right idea, so let's look at that first.

Debugging is an art. As I write this I'm desperately trying to track down a bug myself in a 26,000-line 68000 program, and it's not easy. The key to any successful debugging operation is to narrow down the quantity of work you have to do as quickly as possible. It's like solving a murder. Think about it: if someone in London gets murdered, you wouldn't knock on every single door in Great Britain and ask "Did you murder this person?" – you'd be there for your entire life, if not longer. You'd first try and find some clues to help reduce the number of people you have to speak to, and having spoken to them, maybe narrow it down even further still. Debugging is just like this. Think of your next bug as an axe-wielding bloodthirsty maniac who's viciously out to kill the program which you've been working so hard on. This time he ain't going to win: you're after him, and you'll stop at nothing. So you'd better find some clues.

Debugging is about finding clues. First, eliminate where the bug can't be. Use any tools which you can get hold of to help you. *Enforcer* is a good one if you have an accelerator card which has an MMU. Commodore (☎ 0628 770088) supplies this for about £25, and it includes all sorts of other debugging goodies. These tools can pinpoint the exact memory location which caused your program to misbehave. This, of course, can be most handy.

Dave Thurston had a smart idea. His source code was very valuable, and one day something corrupted it with what appeared to be random data. Unfortunately, he has an A500 and was not able to run such tools as *Enforcer* which would have almost certainly trapped the problem. So, in an effort to track down the culprit, he wrote a small program in C to scan a source code file and print out any strange characters together with the line which they appeared on. It's a very simple C program, and it's one of his first. Most of the code in it he says came from the book *The C Programming Language*. You might like to type this one in for yourself if you have a C compiler and do a lot of programming – it's sort of comforting to run this program and get it reporting "No errors in your source file!"

Actually, debugging is something which is best covered in a separate article altogether, because there are lots of tricks which can help you trap even the most elusive bugs. In a future edition of *Amiga Shopper* we'll be taking a close look at how such tools as *Enforcer* and Commodore's *MungWall* actually work.

On to this month's program. The fault was quite odd. I've tidied up the source a bit and replaced the faulty code with a new bit. The problem was the following instructions:

```
strcat(dots_string, ".");
if (strlen(dots_string) ↵
   == 128)
   {
   printf("%s", dots_string);
   strcpy(dots_string, "");
   }
```

The bug happened because the string **dots_string** was defined in the following way:

```
char dots_string[128] = "";
```

When the string was 128 characters in length, there was a 129th, the **NULL** termination byte. This code was to print a dot for every block of lines processed, and it seemed a tad over-complex for the job in question, so I made a few minor changes.

A few comments about the program itself. The programmer regularly tried to pile as much on one line as possible, which did make reading the code rather hard at first. It makes no difference how compact you make your C source code textually – that's not going to make it any faster. Think a bit into the future, when you might want to come back to the program and improve it. If it's unreadable, you won't be able to do

JARGON BUSTING

MMU – Memory Management Unit. A nice little gadget that is built into the 68030 and 68040 processor (although *not* in the 68EC0x0 chips, like the one found in the A4000/030), which allows, among other things, for the user to trap illegal memory writes. The Commodore development tool *Enforcer* uses the MMU to show you where your program went wrong, and what the state of the processor was when it happened. A handy tool.

disks. What is it and where can I find it?
Sam Yeung
London

1. No – and you can't get it from Commodore yet because it has not *officially* released a hard disk version of the machine yet. At the time of writing, all A1200s being sold with a hard disk are being supplied and formatted by third parties, and the problem with this is that they cannot supply formatting and partitioning software. I could argue that Commodore is just being awkward, but why shouldn't it be?
2. Partitioning does not involve formatting the hard disk at low-level, although you will have to perform an AmigaDOS format because the new partition will be a different configuration. However, if you have two partitions and partition one of them, then you will only have to AmigaDOS format the two new ones. Odd, but that's the way it goes.
3. Despite common rumour, the A1200 does not have a flicker fixer – more correctly called a de-interlacer. It does, however, have extra high-resolution modes which give double the number of vertical pixels than the original machines. There is a catch though: these screens operate at either 50Hz vertical and 29kHz horizontal or 60Hz vertical and 31kHz horizontal. General-purpose monitors, such as the 1084S, are only designed to handle 50–60Hz vertical and 15kHz horizontal. SVGA monitors can handle these frequencies, but not all can fall back to the 15kHz mode required for standard PAL screens.

The only way to get access to these modes is with the proper monitor – Commodore's 1950 is typical. A better monitor, such as an NEC multiscan, will also allow you to use the 72Hz vertical scan frequencies. The **Screenmode** Preferences tool will tell you what frequencies each mode requires, but in practice a lot of software will not be able to use them. Even with a de-interlacer, the 50Hz frame rate causes flicker, and the faster 60 and 72Hz modes are much more pleasant on the eye – I can say this much from personal experience.

According to Trilogic (☎ 0274 691115), there is more to this than meets the eye, and despite the specifications in the manual, the signal levels have changed. This means an existing monitor conversion lead such as Amiga 23DB to Amstrad monitor does not work. Therefore, I'd advise you check your requirements with Trilogic before laying out any cash.
4. I'm surprised *PageSetter II* does not work on your machine – generally speaking, this type of software doesn't suffer from the problems affecting games. *Office Page 2* (essentially the same thing) worked fine on my A3000 running Workbench 3.0. Can you give us more details about exactly *how* it "doesn't work"?
5. DTP programs will certainly use the bitmapped versions of these fonts created by *Intellifont* (formerly *Fountain),* but they are not directly compatible. No doubt there is a way, but this is not my area of expertise. Anyone got the solution?
6. ARexx is a programming language which replaced AmigaBASIC from Workbench 2. It is far easier to use than AmigaBASIC and infinitely more useful for the many advanced Amiga applications which support it. RexxMast – the master process which must run before ARexx can be used – resides in your System drawer. Just drag it to the WBStartup drawer and ARexx will be available every time you start the machine.

ARexx commands are located in an invisible drawer (you can see it using Show All) called **Rexxc.** ARexx programs are merely text files of ARexx commands and can be started directly from the Shell using RX <command>, or remotely, from an application. The language is examined in our regular ARexx column but *Using ARexx On the Amiga* by Chris Zamara and Nick Sullivan (Abacus, ISBN 1-55755-114-6, £32.45) is an excellent read and comes with a "free" disk containing all the major examples. ***MS***

CODE CLINIC CODE CLINIC CODE CLINIC

this, and it will be your own fault. Dave's listing also had no comments in it whatsoever. He almost certainly felt that for such a small program, comments were unnecessary. Think again. Over time, handy utilities like this tend to grow in size and gain more features, and if they aren't commented properly, adding these additional features becomes harder and harder – and again, you're to blame!

Another thing is that the program is terribly slow. It reads and processes one byte at a time. A much faster way of doing this would be to buffer the reads and either load the entire file you're checking into memory (RAM permitting) and check it there, or do it in, say, 32K chunks. Processing data in memory is much faster than processing it off disk. (Just look at an IBM PC running Windows. It's using the disk as memory all the time, and it's painfully slow as a result!)

The program is still far from perfect, but could easily be modified and improved even further. One possible enhancement could be the detection of other illegal characters, and possibly reading in a line at a time and printing out the whole faulty line with more meaningful error messages.

One last thing though: Dave has the right idea – why debug something yourself if you can get the Amiga to do it for you? *Don't do any work that the computer can do for you!*

LISTING: "FILE CHECKER"

```
/*
   File integrity checking program

   Usage: checkfile filename */

#include <stdio.h>
#include <stdlib.h>

int main (argc,argv)
int argc;
char *argv[];
{
   FILE *FileChannel;
   char *prog = argv[0];
   char Character;
   unsigned long Counter;
   unsigned int LineCounter;

   printf("%s: Source File Integrity ↵
        Checker. 1.00\n",prog);

   /* Check the argument count, we only want
one: The file name */
   if (argc != 2)
   {
   printf("No Filename specified.\n");
   return 0;
   }

   /* Open the specified file for reading,
and show an error if it failed */
   if ((FileChannel = fopen(*++argv,"r")) ↵
        == NULL)
   {
   printf("%s: Unknown file ↵
        %s\n",prog,*argv);
   return 0;
   }

   Counter = 0;
   LineCounter = 0;

   /* Scan the entire file byte by byte
looking for errors */
   while (!feof(FileChannel))
   {
   Character = fgetc(FileChannel);
   if ((Character > 128) || (Character <8))
   {
   printf("\n\aFault in file at offset ↵
        %lu line %u byte was %2x\n",
        Counter, LineCounter, Character);
   }

   if (Character == 0x0a) LineCounter++;

   /* This next bit really isn't too good.
It's a temporary patch that does the same as
the previous long-winded version. I would
recommend re-writing this program to work a
line at a time and printing either a line
count or a dot per 10 lines. */
   Counter++;
   if ((Counter & 0x7ffL) == 0)
        /* Prints a dot every 8192 bytes
        (8K chunks) */
   {
   printf(".");
   }
   }

   /* Close our file and return */
   fclose(FileChannel);

   return 0;
   }
```

From Italian company Claonto comes a new paint program which, on first sight, is very reminiscent of Electronic Art's *Deluxe Paint*. And I suppose it can be no coincidence that Claonto, like many other sensible software designers, has borrowed some of *Deluxe Paint's* keyboard commands to make the user's life less confusing. But these similarities are in many respects simply cosmetic – beneath the surface the two programs are actually quite different.



Some image-processing effects possible in *Personal Paint:* High Blur processing, Dark Vertical Gradient, Embossing,

ADEQUATE PAINTING

Personal Paint has no animation features and its painting tools are on a par with those provided by most paint programs – circle, rectangle, freehand drawing, airbrush, straight-line and so on –



Looking remarkably similar to *Deluxe Paint, Personal Paint* is actually more an image processor than a paint program

though in most respects the painting tools are actually far more flexible in *Deluxe Paint,* with the exception of one which is an innovation among Amiga paint software – a four-point curve drawing tool for making flexible curves. Performance-wise, *Personal Paint's* painting tools are nothing special and the dithered fills in particular are disappointingly crude.

BUT EXCELLENT PROCESSING

But, odd though it may seem, where *Personal Paint* really shines is in the image processing department, though it also does a good turn in text manipulation and prints out surprisingly well too.

Almost uniquely among Amiga paint programs (including 24-bit ones) *Personal Paint* can load GIF as well as standard IFF files *and* save in a variety of formats. This means that the vast array of 256-colour images which are already circulating around the PC and Mac worlds can easily be imported to and exported from Amigaville without the need for a GIF-IFF converter. The only caveat is that the GIF format may well be slowly on the way out, being replaced by the less-restrictive JPEG format (which can handle up to the full 16.7-million-colour range of 24-bit). So perhaps Claonto should seriously consider adding at least a JPEG loader to *Personal Paint* as well.

On the Saver side, as well as standard IFF (ILBM) and GIF formats there is also the option to save the image as C programming code, or in an encrypted format (which can only be displayed when the right code number is used) or as PCX format (a PC-format file type). In each case the best possible palette size is saved to ensure optimum results. However, I'll leave you to work out for yourself whether or not providing these formats is a good thing.

PROCESS-O-RAMA

No other non-24-bit paint program compares to *Personal Paint* when it comes to image processing. With its larder of effects already well-stocked you might be hard pushed to need more, but if you do you can always design and save your own – provided you can get a grip on how "convolutions" work. However, if you *can* just scrape by with the various kinds of Blurring, Darkening, Dithering, Embossing, Negative, Randomise, Sharpen, Texture, Tint, WaterColour and several other effects, then you will probably be well satisfied. By adjusting the type of process, rather than the convolution method, even more variety can be eked out. Add Floyd-Steinberg dithering and you can end up with some cracking-looking results.

Image processing effects can be applied either to the entire image, just a defined rectangular portion or a freehand-defined area. Another of *Personal Paint's* innovations is to be able to apply image processing techniques directly to brushes, which makes for some fascinating uses. Pick up a brush – some text perhaps – and you find it's a simple matter to give it blurred edges, gradient tint it, or turn it into an outline in one simple step – all of which can be used to good effect for video work, for instance.

Still on the subject of brushes, it is possible to do a few extra tricks beyond the usual squash, stretch and shear operations, the best of which are the Shadow and 3D options. Shadow, as you would expect, adds a drop shadow to the brush (though there's only one, non-definable position for it) and 3D does

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Convolution – A mathematical process which compares an image pixel with its neighbours and then processes it according to certain defined criteria in order to produce a whole range of image processing effects such as blur, sharpen etc.

Dithering – By arranging how various coloured pixels are placed in an image it is possible to fool the eye into thinking it contains more colours than it actually does. Various different formulae are available to do this, producing different results.

GIF – Graphics Interchange Format. A 256-colour image format devised by CompuServe (a US information network) as a standard for picture exchange. Now slowly being superseded by JPEG.

JPEG – An inter-platform image compression technique developed to reduce the storage size of images with only minor (if any) loss in quality

OPALVISION UPDATES

If, like me, you've been following the development of Centaur's *Opalvision* 24-bit graphics card since its release in the final quarter of last year, you will be pleased to hear that by the time you read this there should at last be some good news on the release of the long-awaited add-on modules – specifically (I hope) that they will be available at last, giving the board the full video compatibility which it has been lacking.

The reason for the delay appears to have been that the chip on which the *Opalvision's* Roaster Chip (the digital video effects chip) is based was changed for a different model and, as a consequence, a degree of software reprogramming was necessary. On the other hand, the delay may well pay dividends, since the other modules are almost certainly going to have more features than were originally promised – including chroma keying – and they will all be released together, instead of separately as previously planned.

But back to the here and now. Centaur has been busy making beta software versions (that is, versions that are almost but not quite finished) available on its BBS in California for anyone who can afford to get hold of them.

To date, the latest version of *OpalPaint* is 1.9 and all of the shortcomings of the original version which was packaged with the card have been completely overcome – and a host of new features added too. ARexx is working, Alpha Channel is working, several great new drawmodes – including the exciting ChromaCtrl tool – have been released, the Magic Wand is go, brushes can now be pasted down with edge-blending and the whole thing has been given a significant speed increase.

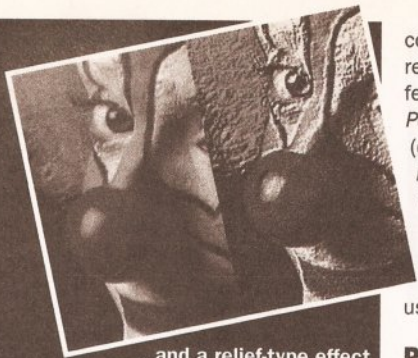
Additional extras also include 24-bit animation control through two further programs: *MakeAnim24* and *PlayAnim24*, which do exactly as thei names suggest. With *MakeAnim24* a series of 24-bit frames are easily

Personal Choice

Personal Paint from Italy is vying for the position of godfather of paint programs. Gary Whiteley assesses its prospects.



Negative...



...and a relief-type effect

a sort of fake emboss, using the foreground and background palette colours to highlight the outline of the brush. Again, used on text, these are quick ways of producing neat effects.

FONTASTIC

Like *Deluxe Paint, Personal Paint* can do quite a lot with text. Both can use scalable fonts, ColorFonts and normal Amiga bitmap fonts, and both offer the usual selection of bold, italic and underlined styles.

Although *Personal Paint* could be better in the way it handles ColorFonts, it is the flexibility it presents when adding text that is important. Imagine that you've just entered a line of text but don't like its style. All you need do is move the cursor back to the start of the line and change the style using a Menu tool. It is even possible to make lower case type become upper case (or vice versa), change the text colour and set its alignment – though doing the latter can be a little strange because there are no fixed margins to relate to.

Text manipulations can be made at any time while the current text is still active (that is, before any other process is started by the user) but the typeface itself cannot be changed in this manner since loading a new font automatically exits text mode, thus stamping the current text into place.

PRINTING DAMN FINE

If you've ever tried to print out images from *Deluxe Paint* you'll know how basic it can be. With *Personal Paint* the situation is considerably better. A couple of set-up requesters allow the easy adjustment of a whole range of settings, including scale and centring, as well as the more usual Preferences settings for print quality control. Because of this flexibility it is possible to get good quality output to any supported printer – PostScript or otherwise.



Look what *Personal Paint* can do to a simple piece of text by picking it up as a brush and applying a few image processing effects!

MIXING IT

The two work screens in *Deluxe Paint* must always the same size, whereas *Personal Paint* allows them be different sized, if you want, which can be handy if you are running short of memory. It is even possible to define screen sizes which are completely non-standard, such as 320 x 371, for instance. Prospective video users will be heartened to hear that full overscan is available in all resolutions.

But more important than the mixed screen sizes is the fact that each screen can also have completely different colour palettes. Should the two images need to be combined, a Palette Merge can be executed to construct one palette which will suit both images as closely as possible. Obviously this method will work well when matching 256-colour images together, but the results may get a little dodgy with fewer colours, particularly because *Personal Paint* cannot handle HAM (or HAM8) images. In fact, *Personal Paint* can only employ between 2 and 256 colours, depending on the model of Amiga it is used on, which seems a little negligent since HAM mode has been with us for nigh on eight years now.

ROUNDING UP THE REST

Gathering up the loose ends I should mention that three different dithering types are available to smooth out images with fewer colours than they should have – Simple, Pattern and Floyd-Steinberg. Floyd-Steinberg takes the longest to execute but produces the best results.

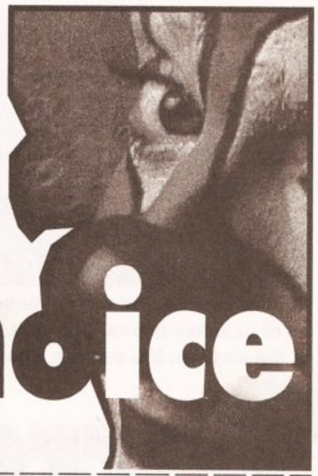
Should you need to grab screens from multi-tasking programs, *Personal Paint* provides a grabber to do this directly.

If you want the program to start in a particular configuration it is an easy task to edit and save the default setup which is launched every time the program is run. You could, for instance, decide that you want 32-colour PAL Lo-Res Overscan with Floyd-Steinberg dithering and automatic resize applied to any images with more than 32 colours which are loaded in. Simply set the program up this way, save the config file accordingly and Bob's your uncle.

All in all, *Personal Paint's* forte is not actually painting – but as an image processor it certainly scores highly. If you are looking for a reasonably-priced image processor with paint thrown in, this may well be your best bet for the time being.

In order to run *Personal Paint* you'll need any Amiga with at least 1Mb of RAM – but preferably with plenty more.

- Gary Whiteley is available via e-mail as drgaz@cix.compulink.co.uk.



SHOPPING LIST

Personal Paint £59.99
by Claonto
From Micro-PACE UK Ltd
☎ 0753 551888

CHECKOUT PERSONAL PAINT

Documentation ●●●●○
The manual I saw wasn't the final version, but it was chock full of details on all kinds of Amiga issues, including *Personal Paint.*

Speed ●●●●○
Not the fastest when it comes to image processing but, considering the cost, by no means a slouch.

Quality ●●●●○
Generally good, though let down in a couple of the painting areas.

Features ●●●●○
Plenty of top-notch image processing let down by some lacklustre paint tools.

Ease of Use ●●●●○
On a par with *Deluxe Paint.*

Price Value ●●●●○
For an image processor that has paint capability the price is really quite reasonable.

Overall rating ●●●●○

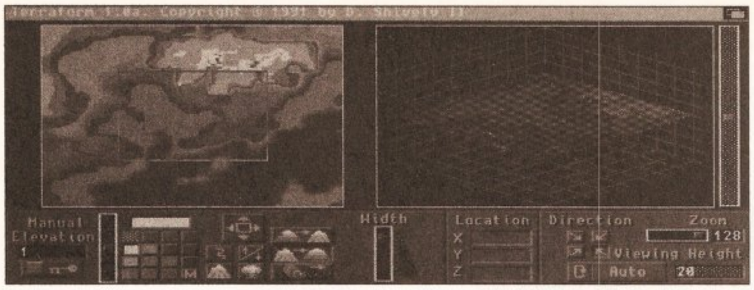
If you need a cheap but powerful entry into image processing with paint functions thrown in, *Personal Paint* is by far your best bet. Quirky but irresistible.

compiled into a 12, 15, 18 or 24-bit animation and they can be scaled down on the fly and compressed with a choice of three different modes to save space.

PlayAnim24 is used to play back the new animation. The main drawback which is actually the Amiga's fault since it can't move the data fast enough) is that full-speed, 25 frames per second overscan hi-res animation is, as yet, impossible. But as visualising tools for animators – especially 3D animators – they will prove invaluable for testing renders at, say, quarter-screen size. Personally, I use this feature very regularly and find it most impressive.

New versions of *OpalHotkey,*

continued on page 50



This simple-looking interface is the key to *TerraForm*. You "paint" the landscape in 2D in the box on the left, using colours that represent different altitudes, and the 3D view on the right shows a selected portion of it in 3D



With *MakePath* you can describe a path by clicking on the terrain to produce a set of linked points. The path then follows the contours of the landscape – in the air or on the surface, according to the transport type you choose

Terraform and go

Gary Whiteley explores a couple of programs that enable you to move any mountain.

Virtual Reality Laboratories' 3D landscape renderer *Vista*, and its bigger brothers *VistaPro* and *VistaPro2*, have been around for some time now, but with more possibilities than ever before for making and playing back spectacular animations – especially in HAM8 or even 24-bit – many new horizons have become available to their owners.

Two programs designed to work alongside *Vista* are *TerraForm* and *MakePath*, and landscaping building and motion making are their aims. And since I've been having fun with them I thought you might like to get in on the act too.

RIVER DEEP, MOUNTAIN HIGH

TerraForm is a terrain editor for use with any of the *Vista* series. It provides all the tools to either modify an existing landscape or to create a completely new one. It can build mountain ranges or create valleys, smooth out one area or roughen another so the ground becomes irregular and more lifelike.

Granted, if you've got *VistaPro2* (or later) then you can import IFF images and turn them into landscapes, so you won't perhaps need *TerraForm*, but owners of earlier versions may well find it indispensable.

Using *TerraForm* is quite like using a paint program. Different colours, which represent different surface elevations just like on maps, are applied to the land surface with a drawing tool which can be resized anywhere between very fine and very coarse. Building up the colours builds up the basic landscape.

Once the landscape structure has been established it can be fine-tuned to make it look a whole lot more convincing. A mountainside can be dragged out into spurs, valley edges can be roughened up a bit or contours smoothed out for a more realistic appearance. It's even possible to adjust the overall height of an area if necessary.

The version of *TerraForm* I was using (v1.0a) has a few drawbacks – it's not particularly fast, and can be a bit of a pig to master completely, mainly because the thin manual doesn't cover the features in quite enough detail. Also, the handy "3D View" only shows a small portion of the entire terrain and so is only really useful for detail work. But as an interim solution for *Vista* users wanting a terrain editor, *TerraForm* is certainly well worth considering.

MAKEPATH

Having created your own landscapes you'll want to render them and probably move around in them and animate the resulting journey. While *Vista* can already do thi,s it isn't exactly the easiest procedure around. Which is why *MakePath* can be a real boon.

MakePath is pretty easy to use. At its simplest all that's needed is to load a terrain, select your transport mode (Glider, Jet, Cruise Missile, Helicopter, Dune Buggy or Motorcycle), add points to indicate where your travels will take you, set the required number of frames and then activate *MakePath* to write a script which *Vista* can understand. The path, and the view from it, can be tested in wireframe preview.

The different transport types make paths perform in ways similar to how the actual vehicle would perform – for instance, a motorcycle will hug the ground closely, while a jet will bank smoothly and present an aerial view. Each setting can be modified by the user to change the height above the ground, its banking and object tracking and whether or not the vehicle travels smoothly or follows all the nooks and crannies of the landscape.

Paths can be designed to be one-way or looping (so that a fly-through repeats forever), and the path can be smoothed by converting it to spline-based curves. The construction points can all be repositioned as you like and finally saved and exported to *Vista* for the final rendering into an animation.

If you use *Vista* for animating journeys through landscapes, *MakePath* will make your passage a whole lot easier. Both *TerraForm* and *PlayAnim* come complete with versions for standard 68000-based Amigas and accelerated machines. AS

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Spline – A mathematically-produced curve which smoothly joins several separate points together by extrapolating between them. Splines are often used to remove severe curves in both 3D work and DTP

SHOPPING LIST

TerraForm..........................£34.99
MakePath..........................£34.99
from: Digital Marketing International
Unit 3, Poyle 14,
Newlands Drive, Colnbrook,
Berkshire SL3 0DX
☎ 0753 686000

continued from page 49

OpalPlayer and *OpalPresents* have also been released.

Centaur has taken the unusual step of publicly releasing developer documents, and lots of other support files as well, to encourage widespread access to the card by programmers and, judging by the number of products which are now supporting *Opalvision*, the company has made the right decision.

Before I forget, there is also new software to display directly to the *Opalvision* card from *Art Department Professional 2*. It is also possible to directly flip to *OpalPaint* when retouching is required. A 24-bit screen blanker, which has had two incarnations so far, provides "New Age" effects to soothe the mind as well as save your screen. A Hot Key addition has been made to directly display QuickRender files direct from *Imagine*. And the latest software release lets you display GIF images directly on *Opalvision*.

Watch this space for more thrilling instalments of *Opalvision – The Next Generation*.

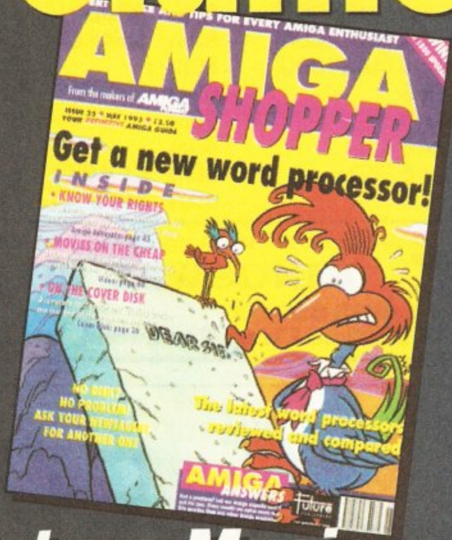
If you want to get the latest software direct from the USA you can call the Centaur BBS on ☎ 0101 310 7937142. There is also an *Opalvision* conference on CIX. DMS also has an *Opalvision* area on its Bulletin Board – ☎ 0702 200060 (7pm – 8am only).

If you don't have a modem you can get hold of recent updates by post from EM Computergraphic, which is providing two-disk sets for £5.99 (inc p&p). Telephone ☎ 0255 431389 for more details.

Please bear in mind that as these are not "official" upgrades you may have little luck trying to get your original dealer to supply these new versions.

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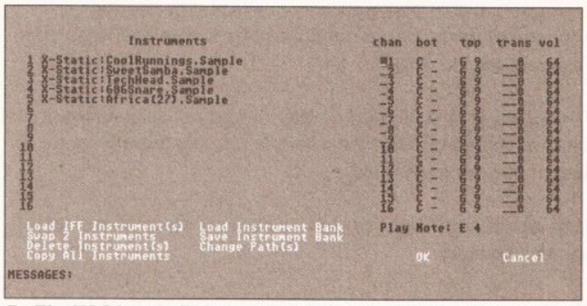
Samples in sequence

Samples have become standard fare in today's music making. Tim Tucker looks at the ways you can incorporate them into your sequences on the Amiga.



If you've been following this music column in *Amiga Shopper* over the last few months you'll have read all about what samples are, how they work and the ways in which the Amiga stores the sample data itself.

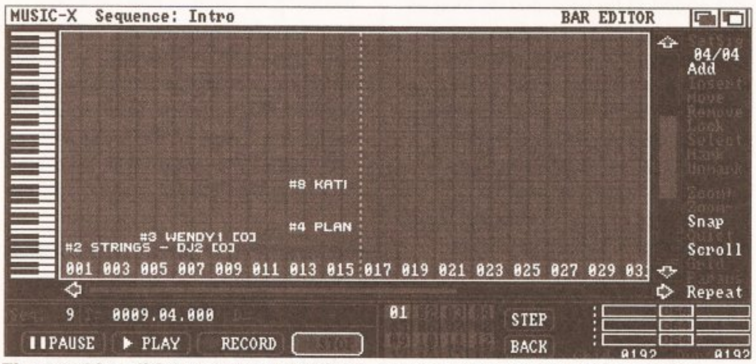
But the story doesn't end there, and when it comes to actually integrating samples into your music there are a few considerations you should bear in mind. This month we're going to look at the best ways to deal with samples in the context of music sequenced on your Amiga.



Dr T's *KCS* has built-in support for IFF samples, with space for 16 separate samples. They respond to note and velocity information

If you want to use sampled sounds with your sequenced music you can either use the sampling capabilities on the Amiga itself or an external sound sampler. It should be pointed out that although using the Amiga to provide the samples is convenient, and involves little extra cost, it doesn't provide the highest quality available.

The Amiga uses 8-bit sampling technology, which is fine for many situations, but if you want to move up to professional-standard, CD-quality sound, then you need to look at 16-bit stand-alone samplers. You pay for it of course (industry standard samplers like the Akai S1000 and the E-mu Emax II Rack will cost you £1,500 to £2,000) but the price is always coming down, and with the introduction of Akai's S-01 at £799 you can access good-quality sounds at a realistic price. The compromise is in the facilities – the S-01 has only eight-note polyphony, meaning you can only play eight notes at a time, compared to the S1000's 16-note polyphony.



The graphic editing screen of *Music-X*, where you can paint bars onto the screen to play samples at any length you want, and at any pitch

But don't count the Amiga's sound capabilities out. It's still very usable, and bear in mind that a lot of the early sampling done on systems like the Fairlight was 8-bit. The Amiga can also provide a very good sketchpad if you want to see how samples will work together, before going into a professional studio and re-sampling them on a higher quality instrument. And even today, bands like Urban Shakedown use the Amiga's internal sounds to produce hit records.

If you want to use Amiga IFF sample files in your sequenced music, you have to be sure that the sequencer you're using supports them. Dr T's *KCS* is the most professional sequencer available on the Amiga, and it provides full support for internal sounds, but I've found the best sequencer for use with IFF samples is *Music-X*. This is because it has extensive facilities for changing the pitch and response time of the sample, as well as enabling you to make keyboard assignments to any of the samples held in memory. Most of the ideas

BEGINNERS • BEGINNERS BEGINNERS START HERE **BEGINNERS • BEGINNERS**

SOUND SAMPLING

A musical note is made up of sound waves that have a certain pitch (frequency) and a certain loudness (amplitude). When you hear a piece of music, what you are listening to is a mass of sound waves which include many different frequencies and amplitudes. The result, in most cases, is a very complex waveform.

Suppose you could "freeze" the sound you were hearing and measure the amplitude of that part of the soundwave. Using some agreed convention you could then express that amplitude as a number. By repeating the process you would get a list of numbers, with each being the numerical equivalent of the original sound.

This is the idea behind sound sampling. By using special hardware which grabs and measures (digitises) that amplitude information many thousands of times a second, it is possible to build up a very detailed digital copy of the original sound.

This opens up a whole new world because computers can then be used to carry out sophisticated editing, making it possible to achieve effects which are impossible with conventional analogue recording techniques. You can take pieces of one sound and mix them with another, speed up or slow down the rate at which a sample is played, or even shift the time-position of a sample before adding it back to itself in a modified form. As you would expect, the quality of the result depends on the accuracy of the digitisation process, and here there are two variables to consider: sampling rate and the resolution of the numbers used to define the amplitude. Fast sampling rates give better waveform detail. You can also improve quality by increasing the range of numbers used to represent the amplitude measurements.

On the Amiga, amplitude digitisation is performed to an accuracy of 8 bits, so there are 256 possible values. This is sufficient for producing some excellent playback sounds with the Amiga's internal sound chips, but not as good as CD technology sampling (which uses 16-bit resolution). This has limited the interest in Amiga sampling for the more demanding applications but, for non-professional use, Amiga samplers have caught on in a big way. All Amiga sampling software makes use of the IFF 8SVX sample format, so sounds captured with one program can be loaded and used with any of the large number of IFF-based music programs. All you need to get into the world of sampling is some digitiser hardware and the software to control it – most Amiga sampling packages include both.

discussed here, however, will work whatever sequencer you're using, and regardless of whether the samples are Amiga IFF files or those in an outboard stand-alone sampler.

SAMPLE TYPES

Samples can be used in all sorts of contexts, but there are a few ways in which they are most commonly used. First there's the one-off "hit" – a sample of a very small sound element, usually a note on a musical instrument or the sound of a percussion instrument being hit. The advantage of this approach is that it takes up very little sample memory, usually being less than a second in length, and enables you to do whatever you like with it once you've got it. Say for instance you sample a note from a bass instrument. You can now record a bass part with it in your sequencer, just as you would with a bass sound on a synth.

When you do sample a musical hit like this, spend time determining which pitch you have sampled, and assign it to be triggered from the same pitch on the keyboard. This saves a lot of time when you come to play along with other instruments – you won't be fumbling around transposing the notes in your head.

The problem with one-hit samples is that they don't stand up to transposition too well. It depends

> **"The problem is that one-hit samples don't stand up to transposition well."**

entirely on the sound being used, but if you try playing the sample much higher or lower than its original pitch it starts to sound less realistic. This is just a natural property of sound and timbre, and to overcome it you need to do a new sample at the point where the sound starts to suffer. For example, you might do a sample of a bass at C2, which sounds good up to about F#2. You then need to take another sample of the instrument at G2, and so on up the keyboard until you've covered the range that you wish to use. This technique is called multi-sampling.

This of course might not always be practical. If you've sampled the sound from a record, for instance, you may only be able to get one note for sampling, which naturally limits the range at which you can use it effectively. There are quite a few companies producing CDs which provide sounds ready to be sampled, and these usually give you more than one note of an instrument to sample so that you can create effective multi-sampled instruments.

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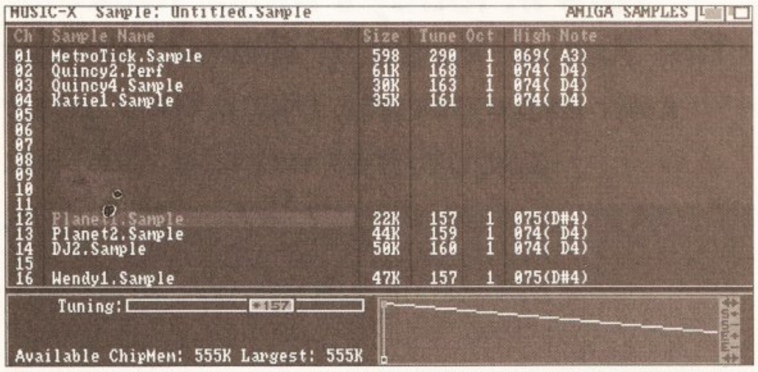
CD – Compact Disc – a very high quality digital music storage medium.

IFF – Interchange File Format is a means by which data from different graphics or sound sampling programs can be saved in a compatible way. It allows data to be exchanged between programs very easily and avoids the situation on, say, the PC where dozens of different graphics packages each save data in incompatible formats.

Multi-timbrality – The ability of a synth to play different notes using different voices (or timbres) at the same time; for example, playing a drum sound, a bass and a piano sound simultaneously.

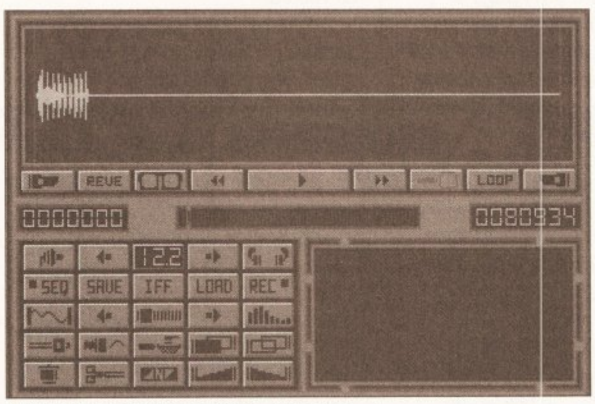
Pitch – The measurement of how "high" or "low" a note is. The higher a note's pitch, the higher its frequency.

Polyphony – The ability of a synthesiser or other electronic instrument to play more than one note at the same time, *either* as separate voices or timbres *or* as chords of one sound. Compare this with multi-timbrality.



***Music-X's* sample page, where you can fine-tune any samples you happen to have lying around, alter their volume and assign them to independent channels, so that you still have 16 MIDI channels left to play with**

The other problem is memory. Something like a piano needs to be sampled relatively frequently up the keyboard to make it sound realistic, and this can eat up your available memory as you store all the separate samples needed to make up the entire instrument. Try to determine the range of the part before you record the samples – this could save you a lot of wasted time and effort when you come to use them.



A "hit" is a shorter sample. It takes up less memory and enables you to do more with it in your sequencer

LOOP THE LOOP

Another useful application of sampling is to create what are known as sample loops. This is not to be confused with the loops programmed into the samples themselves. The latter is a facility offered by some samplers that enables a certain part of a sound to be repeated as long as the key that triggered the sample is held down. This is most often used when you want the sustain part of the sound at the end of the sample to keep playing, just as it would if, for example, you kept your finger down on the string of a guitar.

The type of loop I'm talking about is a technique associated with sequencers. The sample in this case is not a hit, but a small segment of actual music. In the case of a drum part it would be a bar or two of drums played by a drummer or drum machine, and when sampled is often called a "break beat". The sequencer is used to trigger the loop, and repeatedly trigger it to provide a continuous rhythm. To take the example of a one-bar drum break beat, the sequencer would provide the trigger to the sample on the first beat of the bar, and the sample would then play until the next bar, when it is re-triggered.

The major consideration is getting the sample and the sequencer in sync. This requires matching the tempo of the sequencer with that of the drum beat on the sample. If the sequencer is too slow, there will be a silent gap between the end of the rhythm and the point at which it's triggered again. Too fast, and the sample never finishes its rhythm before it's forced to start again. The best approach is to decide on the tempo at which you'd like the track to play, and then concentrate on getting the sample to play at the same tempo by tweaking its pitch. A fine tune on your sampler is necessary in this case, because even subtle differences in tempo will produce a notably dodgy rhythm. Don't try to match the tempo of the sequencer with that of the break beat, because few sequencers have the fine control

> **"Even subtle differences in tempo produce a notably dodgy rhythm."**

of tempo necessary to get the two perfectly in sync.

MUSICAL MATCH-UP

To make sure that the sample is playing perfectly in sync it's often helpful to mute out all the instruments in your sequence first and just have a click track going. A click track is a regular pulse played on every beat of the bar with a simple percussive sound, like a rim tap or closed hi-hat. It's used in sequencers to give you a count-in and keep the rhythm while you're recording sequences, but it also provides a great way to hear whether your sample's in time or not without cluttering up the sound and making it difficult to hear exactly what's going wrong. When you've got the two matched up, drop the click track too and listen to whether the sample sounds natural as it loops.

If you're planning on looping a

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Sample – A digital – computerised – representation of a sound. A sample can be sent through a digital-to-analogue converter (the Amiga has four of these) and be heard as sound. Changing the speed at which the sample is played back changes the frequency (or pitch) of the sound.

Sequencer – A piece of software on a computer (or sometimes built into a keyboard) which stores musical scores and transmits this information in real time via MIDI to synthesisers which will then play it. Some sequencers have the facility to receive and memorise MIDI information from a music keyboard so that music can be entered "live" instead of note by note.

Tempo – The speed at which a piece of music is played, measured in beats per minute. Most popular music has four beats to a bar.

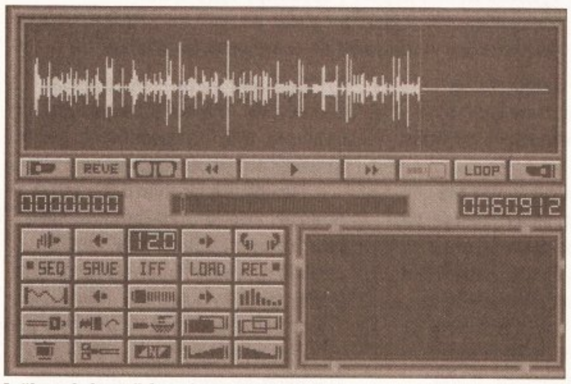
16-bit sampler – A device which converts sound to digital information suitable for processing by the Amiga. Standard Amiga samplers use 8 bits; a 16-bit sampler has a much higher quality, equivalent to the sound produced by a CD player (subject to the sampling rate – CDs work at 44.1kHz).

sample that contains musical notes you have more things to consider. Not only does the sample have to be in time with the rest of the music being sequenced, it also has to be in tune with it. Again, the best way to start is to get the sample in time with the rest of the track first, as described with the breakbeat. It's again essential to mute the other instruments while you're doing this, because otherwise it'll just sound horribly out of tune and possibly put you off using it.

> **"A pitch shifter can tweak a sample's pitch without altering its speed."**

Once you've got the two in sync, bring in one of the musical parts, say the piano, and see how far out of tune the two are. If they're perfectly in tune you're lucky, but the chances are you're going to have a bit of adjusting to do. Transpose the piano part in your sequencer in steps until the two parts are playing in the same key. Once you've got it right you can apply the same transposition to all the other instruments in the song (but not any drum parts, remember – transposing them just causes different drums to play). Save the song with the new transpositions in place and you won't have to do any more fiddling in the future.

If you find that the two are quite closely in tune but still slightly out, you may have to use the fine tune on the synths themselves. This leaves you with the problem of always having to remember that the synths need fine tuning for that particular song, so either make a note of it somewhere or see if you can download the information from your synths using System Exclusive messages and record them into the sequence. You then play the System Exclusive messages before the song starts, and *voila,* all your synths will be in tune with the sample. If all of this looks too complicated, try the reverse procedure. Get the loop in tune with the music that's in your sequence using the fine tune on the sampler, and then see if you can match the tempos by adjusting the tempo control on the sequencer.



A "break beat" is a long sample, usually a bar or two, which can be looped or repeated in the sequencer to create a continuous groove

If your sample consists of only vocals, then you don't need to worry about the rhythm so much. Vocalists are quite often lazy with the rhythm anyway, and a little looseness here can add a much needed natural feel to the track, so concentrate on getting the two in tune.

A STRETCH IN TIME

Of course all of this is not without bother, and you could quite possibly come across a few seemingly insurmountable problems on the way. With a musical loop you may find that when it's been transposed to the point where it's in rhythm with the sequenced music, it sounds less satisfying as a sample. This is linked to the problem already discussed above, in that any samples are going to sound less convincing when they're transposed too far from their original pitch.

One solution is to keep the sample as it is and match the tempo using the sequencer's tempo controls, but there is every chance that the tempo will then not feel right for the music you've composed. At this point you might feel tempted to ditch the idea of using the sample altogether and move on to something else, but there is help at hand if your sampler boasts a feature known as time stretching.

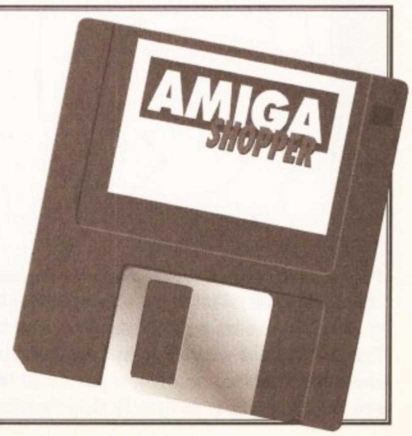
This very clever feature enables you to create a new sample from the original by re-sampling it internally, and the result is a sample with the same pitch but played at a different speed, or vice versa. Now you can preserve the pitch of the sample, and just change its rhythm to suit the rest of the music. The Akai S1000, S1100 and S3000 ranges all incorporate this very useful feature, but at a price of course. On the Amiga the only sampler I know that offers this facility is *Audiomaster IV* from Oxi/Aegis (and Ramscan's identical *Audio Engineer II,* which comes bundled with the excellent *Audio Engineer Plus* hardware), and even at the relatively high price of $75 these packages are worth considering for this feature alone.

An alternative way of dealing with the problem is to use a feature that appears on some effects units known as pitch shifting. This, as you may guess, changes the pitch of any audio signal coming into it, often to a very fine degree. By playing the problem sample at the correct speed and routing it through the pitch shifter you can tweak its pitch without altering the speed at which it plays. This is a lot quicker and easier than going through lengthy time stretching manoeuvres, but of course you need to have the gear to be able to do it. If you're on the lookout for a reverb unit or multi-effects box, it's worth paying the extra it might cost you for this handy feature.

As you've no doubt realised, using samples in a piece of music is not as straightforward as it might seem, and requires creative arranging skills and a good ear to get the best results. Using the techniques described here should help you get the most out of your samples, and once you get used to the procedures it's a lot quicker than it sounds. With a little time and effort you should be able to get any samples you want working with your sequences, but there are always going to be the ones which, however much you try, simply don't fit in. Always use your artistic judgement to determine whether it's really working or not, and you'll soon get much quicker at deciding whether a sample is going to be worth the effort to get it right.

• The major producers of sample CDs are AMG (☎ 073088 383) and Time+Space (☎ 0442 870681). Contact them for catalogues or ask at your local music instrument dealer.
Akai ☎ 081 897 6388.
E-mu ☎ 031 653 6556. AS

NEXT MONTH



Next month I'll be showing you how to get to grips with the Tracker-style of sequencer programs. They're great for producing music using the Amiga's in-built sound facilities, and require very little knowledge of the theory of music. They've found particular success when it comes to creating music for commercial games.

As an added bonus, we'll be including one of the latest Tracker programs on the cover disk so you'll be able to work through everything yourself.

I'll also be taking a look at the brand new version of Electronic Arts' *Deluxe Music Construction Kit,* a sequencer that provides notation facilities.

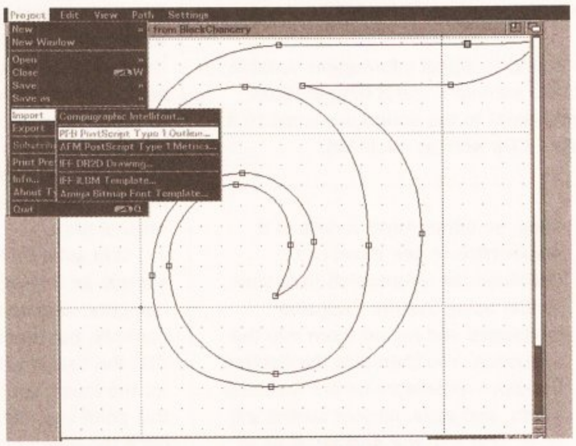
Face value

Tired of the same old fonts? Desperate for a really distinctive look for your DTP pages? Jeff Walker explores a font designer package that enables you to create or customise typefaces to suit yourself...

You may have read about _TypeSmith_, the _Font-Designer_ program published by BSC in Germany. Soft-Logik, the _PageStream_ people, liked it so much that they bought the rights to distribute the program in all countries where English is the native or main spoken language.

But before unleashing this English version of *FontDesigner*, Soft-Logik decided to change its name, spruce up the user interface and write a decent English manual. The user interface is similar to the one found in *PageStream* and *Art Expression* (reviewed in *Amiga Shopper* 24), so owners of those programs will feel right at home. The manual is the usual excellent Soft-Logik production job, although it lacks step-by-step tutorials for designing characters. But then drawing lines and curves in *TypeSmith* is exactly the same as drawing lines and curves in any structured drawing program, and it's a fair assumption that most potential *TypeSmith* users will already understand how bezier curves work.

TypeSmith's "native" format is Soft-Logik's own outline typeface system, familiar to *PageStream* owners – the **"typeface.dmf"** and **"typeface.fm"** files. The Open and Save functions in *TypeSmith* load and save typefaces and metrics files in this format only. If you are designing typefaces exclusively for use with *PageStream*, this is the only format you'll need to worry about. Alternatively you can create either PostScript typefaces that can be used by many programs on several different makes of computer, or CompuGraphic Intellifont typefaces that can be used with many different Amiga programs.



TypeSmith can import PostScript Type 1 and CompuGraphic Intellifont data, as well as _DR2D_ drawings and bitmaps to be used as templates for tracing

PostScript support is the MS-DOS Type 1 format, which *TypeSmith* will both import and export, and it will also export Type 3 format, which are the "typeface.psfont" files used by *Professional Page* when you elect to download typefaces to PostScript devices from that program. If you need to import Macintosh format Type 1 typefaces, then you will first have to convert them to MS-DOS format – a PD utility for doing this comes with *PageStream*, and there are various other shareware and commercial utilities available to do the job.

PostScript Type 1 faces have various "encoding vectors" that describe where in the character set certain characters are. Alphanumeric characters and punctuation marks will almost certainly always be in the same places – the letter A is on the "A" key, the question mark is on the "?" key, and so on – but special characters, like accented letters for example, may be in different places for different encoding vectors.

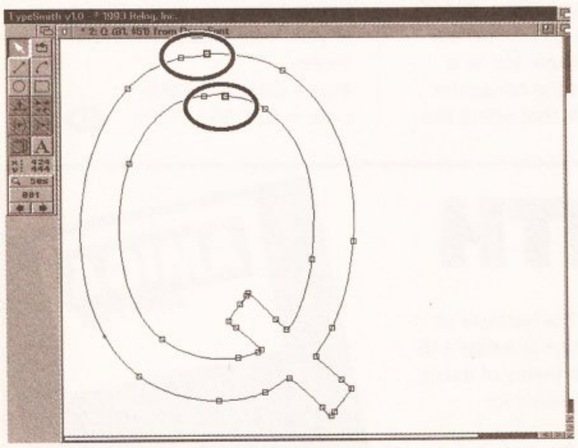
TypeSmith supports the most popular, Adobe Standard Encoding, plus its own custom *TypeSmith* Encoding, which is similar to the Soft-Logik character set. Some Type 1 faces that you own or buy may use other encoding vectors – like Apple Encoding for example – and these are not supported. Such files may be imported but the encoding method must be changed to *TypeSmith* Encoding if you want to be sure that all the characters end up in the places (on the keys) where you expect them. When exporting Type 1 faces you may select Adobe Standard Encoding if you prefer.

Details of the "metrics" for Type 1 faces – the character spacing and widths, the kerning pairs and composite characters – are kept in the **"typeface.afm"** file, and these also may be imported. Many AFM (Adobe Font Metric) files do not contain kerning information – those that come with shareware and PD faces in particular – so *TypeSmith* comes with an AFM file that does contain kerning information which you can use as a basis for creating proper kerning pairs for any typeface. There is no way to automate this process, but this is not a fault in *TypeSmith*, it's a fact of life.

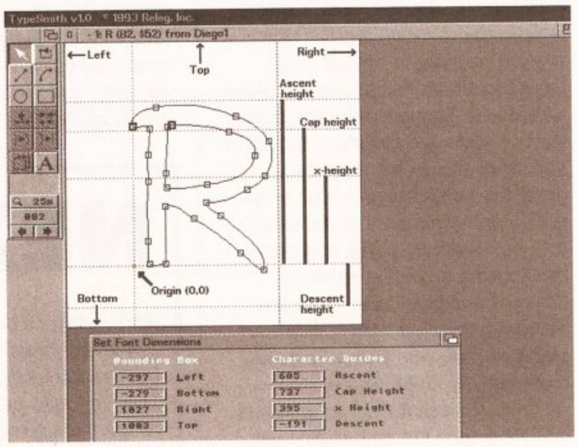
TypeSmith will import the standard Amiga Intellifont faces that come with Workbench 2 and 3 and programs like *Wordworth 2*, and the Intellifont faces supplied with Gold Disk packages like *Professional Page*. Most of the "PD" Intellifont faces doing the rounds have been converted from PostScript Type 1 format by Gold Disk's *FontManager* program, so these also import fine.

Although the single Intellifont **".type"** or **".lib"** file (they are the same thing but with different filename extensions) contains all the typeface data – outlines, widths, spacing and kerning information – *TypeSmith* imports only the character outlines and widths, not kerning information. When you save as Intellifont, no kerning information is exported by *TypeSmith* in either the main data file or in the **".metric"** file.

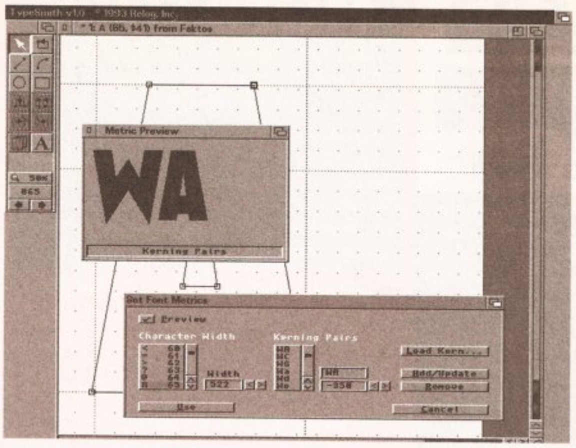
I know of only two DTP packages that are able to kern Intellifont typefaces from reading the information in the **".type"** or **".lib"** file, *PageStream* and *Wordworth*. With *PageStream* you are better off using Type 1 faces or the program's own outline format, so the question of Intellifont kerning support is academic. But Intellifont is the only outline format *Wordworth* supports, and while it is able to kern the Intellifont typefaces that come with it, if you run these through *TypeSmith* and save them out again, *Wordworth* can no longer kern them. Either the kerning information has been destroyed or the Intellifont format



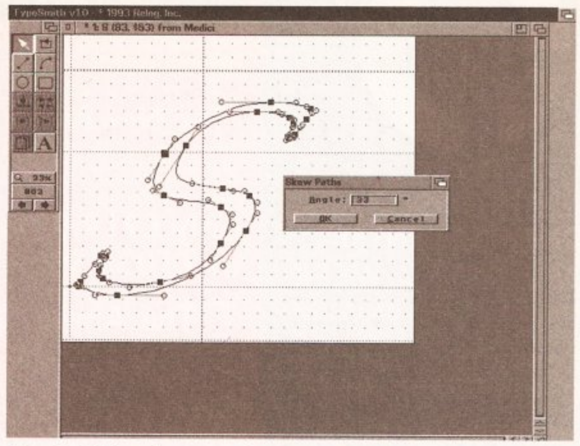
This 300pt CGTriumvirate bitmap letter Q was auto-traced by _BME_, saved as a _DR2D_ drawing and them imported into _TypeSmith_. Not a bad job, but the two ringed areas need obvious attention, and when you zoom in close you can see that the whole outline is very "wobbly" indeed.



Font dimensions are a matter of personal taste. The largest bounding box supported by _TypeSmith_ is 1,400 by 1,200 units. This imported Type 1 just about makes it, although in this particular case there are areas to the left and underneath the descent line that can be got rid of



Setting up all the kerning pairs is a tedious task, but *TypeSmith* provides a helpful preview panel that updates automatically as you change the spacing value



***TypeSmith* has features that enable you to skew, rotate, duplicate, scale and flip any path or group of paths. This helps to get custom characters and true italics just right**

saved by *TypeSmith* is not quite the same format as those typefaces that come direct from Agfa.

Professional Page uses a separate **".metric"** file to store kerning information, and provided that this file actually contains that information it will kern all Intellifont typefaces, including those that *Wordworth* won't.

Alas, as mentioned above, the **".metric"** files created by *TypeSmith* do not contain any kerning information. But there is a way around the problem: save the typeface out as a PostScript Type 1 PFB, and AFM files from *TypeSmith,* then use Gold Disk's *FontManager* to convert it to an Intellifont typeface – *FontManager* reads the kerning information (if there is any) from the **"typeface.afm"** file and includes this in the **"typeface.metric"** file it saves. In this way *Professional Page* and *PageSetter 3* users can create kernable typefaces from the many PD and shareware typefaces that come with no kerning information at all.

But *TypeSmith* cannot create Intellifont typefaces that can be kerned in any package that supports Intellifont kerning, like *Wordworth 2* for example. So while *TypeSmith* "supports" Agfa's CompuGraphic Intellifont format, it doesn't appear to "fully support" it. Intellifont may be the least useful of the typeface formats to *PageStream* users, and most professional typeface designers and desktop publishers will be more concerned with PostScript Type 1 support, but Soft-Logik should be cautious about thumbing its nose at what is, whether it likes it or not, the current standard outline typeface format for the Amiga.

DESIGNS ON YOU

From a design point of view *TypeSmith* has all the features required to create typefaces to a high professional standard – assuming you have professional-level skill! That's not to say designing typefaces is difficult, merely painstaking. Normally the typeface will be designed and drawn on paper first, using a very enlarged grid system. This can then be transferred to the computer, either by re-creating it "freehand" using the drawing tools and coordinate editing system provided or by scanning and saving scaled-down versions of the on-paper designs as bitmaps, then loading these as templates so that you can trace around the outlines.

Did you expect a typeface design program to be able to trace such templates, or even whole bitmap fonts, automatically? Well, it is possible using the Trace feature of *BME* (which comes with *Art Expression)* to turn a bitmap into a *DR2D* structured drawing and then import this into a typeface. But "auto-tracing" bitmaps to the kind of accuracy required to produce perfect paths for outline typefaces is a sophisticated business. (For a start you need a fairly large, high-resolution bitmap.) The latest version of *Fontographer* on the Mac can do it quite well, but that program costs more than £400. *TypeSmith* costs £135 and can't auto-trace bitmaps.

Probably the main advantage of being able to import *DR2D* files is that it enables you to create characters, or parts of characters, in *Art Expression* or *ProVector,* both of which structured drawing programs contain many advanced drawing tools that may help speed up the creation process.

But the drawing tools provided in *TypeSmith* are perfectly adequate for the job. There are tools for drawing lines, curves, ellipses and rectangles. There's a tool to add a point to a path between two previously selected points, a tool to join the points of two paths (enabling you, for example, to draw serifs and stems as separate objects and then join them together to form a single object), a tool to turn a line into a curve, a tool to turn a curve into a line. But *TypeSmith* was written by Relog Inc and not the same people who wrote *Art Expression,* so the tools in the TypeSmith toolbox might look the same as those in *Art Expression* and perform essentially the same functions, but they work in a slightly different way – something to watch out for.

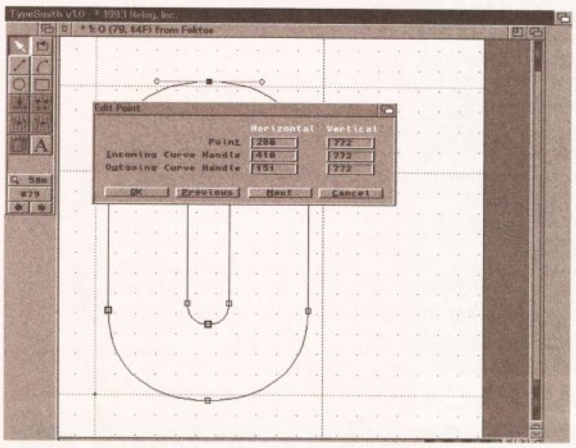
The magnification tool enables you to zoom in close enough to do detailed work, and there's a grid that can be snapped to in four set sizes of 10, 20, 50 and 100 "character units" in both directions – at 100 per cent magnification, one character unit equals one screen pixel. The current coordinates of the pointer are updated in real time along the title bar of the character window.

The maximum size bounding box is 1,400 by 1,200 character units, and while there are a few typefaces out there that may be designed with larger bounding boxes, this maximum size should be plenty big enough. The maximum number of points per character is 1,536, the maximum number of paths per character is 100. Again, you may come across the odd typeface that exceeds these limits and so won't import completely into *TypeSmith,* but these maximums are way up in the sky design-wise and shouldn't hold you back at all.

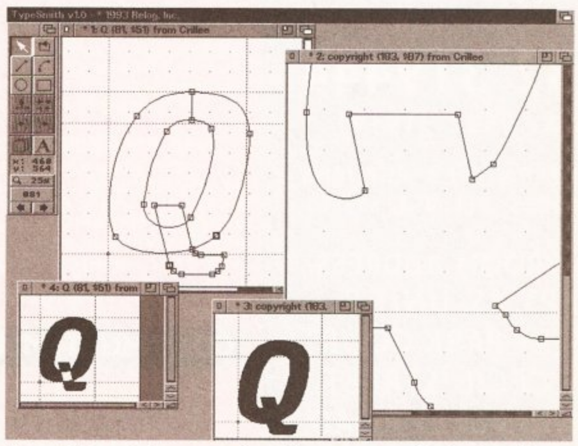
Several on-screen guides can be displayed so you can always see the positions you have specified for the typeface's ascent and descent heights, cap and x-heights, plus the left and right edges of the character. The right edge, however, may cause beginners some confusion because it will not be shown if a character's width has not been set and is still therefore zero. If a background template has been imported it can be toggled on and off, and characters can be displayed as solid or as unfilled outlines.

A character set Overview panel enables you to quickly see which characters in a typeface are present and which aren't, and by double-clicking on any character here you can open up another editing window – either of a different character or of the same character at a different magnification. Up to five windows may be open at once. I found on my

continued on page 61



If you are transferring your typeface design from an enlarged original drawn on grid paper you will find *TypeSmith's* Edit Point feature invaluable. Might take you a while you work out how to alter the incoming and outgoing curve handle coordinates properly though...



Many PD and shareware typefaces are poorly designed. The stroke of the Q in this face (left) is a separate object that has been drawn and laid over the top of the circle. This simply does not work in typeface design; the correct way to do it is shown in the large window in the right

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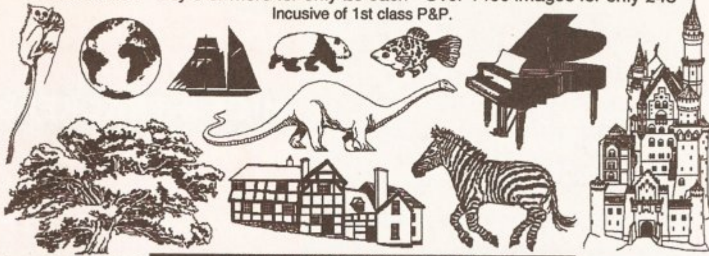
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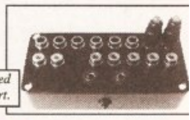
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continued from page 57

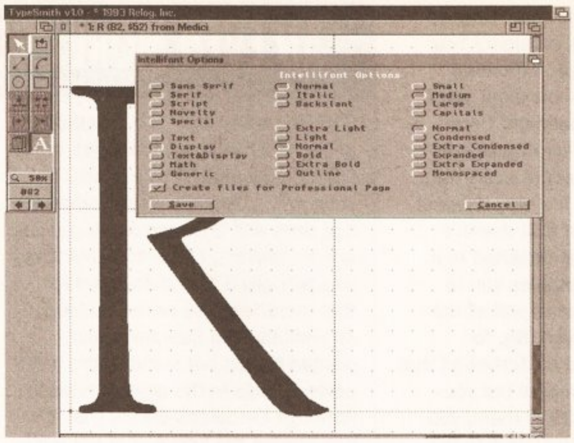
1Mb Chip RAM machine that I rarely had enough Chip RAM left to open even a second window at high magnification, but all five opened easily at low magnifications.

The Overview panel also enables you to cut, copy and paste characters or ranges of characters. While using Overview with some imported typefaces, you may come across characters in the typeface that don't match with the character you clicked in the Overview panel. This is to do with the encoding vector discussed earlier. If you find yourself in this situation there's nothing for it but to copy and paste characters into the positions you want by hand.

To "goto" any particular character, and therefore have it displayed for editing in the active character window, you simply press that key (or combination of keys for "alternate" characters) on the keyboard or enter its ASCII value into the Goto requester.

A Type Preview panel enables you to type one line of text in 50pt, 75pt or 100pt in order to see how it all fits together. Character widths can be adjusted by mouse or by keying in a character unit measurement for this distance. Up to 1,536 kerning pairs can be created, and, while there are in theory about 9,000 or more possible kerning pairs in any given typeface, even the most discerning designer will stop defining them in the low hundreds because this part of typeface design is Boredom City and is one reason why so many PD and shareware typefaces don't contain kerning information. However, a professional typeface isn't properly finished until its kerning pairs have been created, so it's a job that has to be done.

There's a Metrics Preview requester that enables you to quickly see what effect your changes have had. *TypeSmith* enables you to import the metrics from any Type 1 AFM file, which saves you the bother of having to enter each pair yourself.



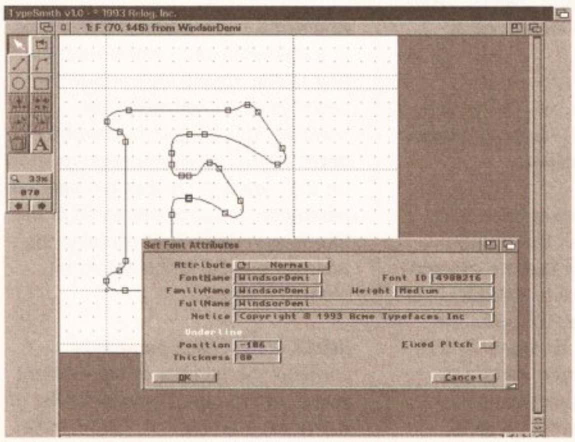
The Intellifont Options requester is confusing. Selecting Italic, for example, does not create an Italic typeface. All you are doing is inserting information about the typeface you have designed into the file. I don't know of any software that uses this information – including *TypeSmith*

Be warned that many of the AFM files that come with PD and shareware Type 1 faces do not match the PFB (Printer Font Binary) file properly. Sometimes the two files that comprise a Type 1 typeface (AFM and PFB) have been collected from two sources or created by two different programs, and don't rightly belong to each other despite having the same name. If you find yourself in this position with a typeface, you'll have to create a new AFM file from scratch, defining all the character widths and kerning pairs yourself.

Composite characters are supported so that, for example, an "é" character could be created from the regular "e" character and the acute accent character. Other acute-accented characters can be made up in the same way. This saves time and memory drawing characters with common components.

There are special effects features in *TypeSmith* that enable you to scale, skew and rotate any path. Scaling and rotating can be done relative to the centre of the selected path or relative to the "origin" of the character (the bottom left-hand corner). Paths can be flipped horizontally or vertically, and they can also be duplicated.

In short, you have plenty of tools with which to design your typefaces.



Take some time to read the manual and learn about Font Attributes – they are important parts of all typeface files

LET THE PROGRAM TAKE THE STRAIN

One other way of creating typefaces, other than by freehand or by tracing over a template – and this is a very specialised and technical process, so don't get too excited about it – is by letting the computer compute it – "algorithmically-defined" typefaces, I think they call them. *TypeSmith* has an ARexx port, so there's no earthly reason why you couldn't employ this method should you so desire. (And jolly good luck to you!)

ARexx is useful in other areas, and a handful of example scripts are supplied, including a fairly long demo of all the ARexx features which features a computer-drawn letter "A", although it is drawn from given coordinates rather than computed ones.

One of the scripts enables you to save each character in a typeface as a separate *DR2D* structured drawing, thus creating a library of *DR2D* characters. Another script will import such a library into a typeface, and another shows how ARexx can be used to move a whole character in both directions. The most useful script is the one that goes through a character checking for unnecessary co-located points, and removing any that are found.

Of course all this ARexx stuff is strictly for programmers. The manual details each of the *TypeSmith* ARexx commands, but little more. If you want to program in ARexx you need to learn from another book, not the *TypeSmith* manual.

The program will work from floppies with 2Mb of RAM (512k Chip) and Workbench 1.3, but as with many applications these days, Workbench 2.04+, 1Mb Chip RAM and a hard drive are recommended. The program is compatible with the AGA chipset, but designing outline typefaces on a 256-colour screen is ever so slightly overkill.

I suspect many users will be regarding *TypeSmith* as a glorified typeface format conversion program, and as a consequence may consider its price tag way too high. But of course its main purpose is designing typefaces, and bearing in mind that professional-quality typefaces can be sold for £20 each or more, and maybe a hundred times that for a typeface designed exclusively for the use of a single (and very rich) client, the cost of *TypeSmith* pales into insignificance.

Even a PD librarian who is into DTP could earn some money from *TypeSmith*. Many, many, many of the shareware Type 1 typefaces doing the rounds are incomplete, contain incorrect character widths, dodgy characters and no kerning information. A lot of these typefaces are very elegant designs, spoiled for lack of a little spit and polish. And remember, once you've significantly enhanced any PD typeface you have a perfect right to claim exclusive distribution of the AFM file at the very least, and charge a premium for the work you have put in.

Apart from the CompuGraphic Intellifont support, which isn't quite up to scratch, *TypeSmith* is difficult to criticise. There is no other typeface design package for the Amiga, so even it were bad it would be good – you know what I mean. But as it happens, it's good. Extremely good. AS

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CHECKOUT TYPESMITH

Ease of Use ●●●●○
Converting formats is as simple as pointing and clicking; actually designing a typeface from scratch is – because of the nature of the task – a good deal harder, but the templates and *DR2D* import features can help.

Features ●●●●○
TypeSmith is almost exactly the same (features-wise) as the famous *Fontographer* program for the Macintosh. But there's room for improvement by allowing larger bounding boxes, kerning support for Intellifont faces and lots of powerful ARexx macros.

Speed ●●●○○
Like any structured drawing program, on a 68000 machine it will creak along as fast as it can.

Documentation ●●●●○
The usual Soft-Logik style of manual – easy on beginners, but enough technical information to keep more experienced users happy.

Price Value ●●●●○
It may appear expensive, but keep in mind that *Fontographer* for the Mac costs three times as much.

Overall rating ●●●●●
It's the only outline typeface designer for the Amiga, and it does its job very well indeed, so it has to get top marks, although I hope Relog and/or Soft-Logik continue to develop and enhance it.

Last month we certainly covered some ground with our discussion of AMOS Pro's Interface language. If you were able to take everything in, you should now be able to set up an Interface communications port and even write your own Interface programs, complete with fully-working buttons. This month we go a little further by extending the number of gadgets we can use, with a look at Interface's ActiveLists and Scroll gadgets.

Before we dive in, though, let's rest our typing fingers by taking a look at what these two gadget types are and what they are used for. First, the ActiveList. Well, although the name may seem unfamiliar, I can bet you that you've used ActiveLists many, many times before. No? Yes you have! ActiveLists are an integral ingredient in the design of the humble file requester. As you know, file requesters work by displaying a list of the files within a given directory. If you want to select one of these files, you can either type in its filename using the keyboard or – quicker still – just click on its name in the file list. Believe it or not, but this "file list" is actually a gadget type – an ActiveList, to be precise.

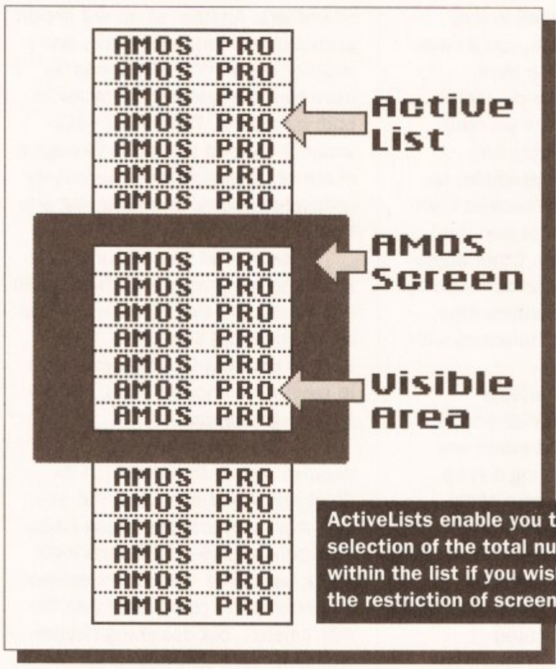
> ***"ActiveLists are an integral ingredient in the design of the file requester."***

ActiveLists aren't just restricted to use within a file requester, though. They come in very handy indeed when you need to present the user with information in the form of a list. Say, for example, you were writing an address book program. You could use an ActiveList to display every entry within the address book in the form of a list of surnames. If users wanted to view the details of a particular entry, all they would have to do is to click on the surname in question and the program would handle the rest. Better still, the maximum number of "elements" within an ActiveList isn't restricted to the vertical size of the screen – because you can actually dictate how many elements are shown on-screen at once, you can create a sort of "window" that displays only a small portion of an ActiveList's contents.

MAGIC SCROLL

Problems do arise, though, when you use an ActiveList that contains more "elements" than you can actually display on-screen at once. How do you get around this problem? You use a "scroll" gadget – Intuition programmers will know them better as "proportional" gadgets. Once again, the humble scroll gadget is a very important aspect of every file requester. Indeed, it's very unusual to find an ActiveList that doesn't have a scroll gadget attached to it. The scroll gadget enables you to physically change what part of the ActiveList is displayed. So, for example, if you had an ActiveList that contained 100 elements but you could only display 20 of them, you could attach a scroll gadget to the ActiveList that enabled the user to move through the ActiveList to display any 20 of the 100 elements on offer.

Scroll gadgets work by returning a value between 0 and a maximum value that you specify. The value returned depends entirely upon the position of the scroll gadget "handle" (the bit that you actually move with the mouse pointer). If, for example, you created a scroll gadget with a range of 4, it could return a maximum of four values – 0, 1, 2 and 3. This value is then automatically passed to the ActiveList that uses it to control what part of the ActiveList is displayed in the ActiveList "window" (the visible part of the ActiveList). This value actually specifies the element number of the first entry that is displayed. If you therefore were able to display five ActiveList elements on the screen and the scroll gadget returned a value of "90", elements numbered 90, 91, 92, 93 and 94 would be displayed.



ActiveLists enable you to view only a small selection of the total number of elements within the list if you wish, thus removing the restriction of screen resolution

CODE CRAZY

That's enough of the theory, let's get stuck into some good old-fashioned coding. As you can see from the listing on page 64, I've included the Interface demonstration program from last month's *Amiga Shopper* cover disk, just in case you haven't already printed it out and studied it till you turned blue in the face.

Looking through the short Interface language program at the start of our demonstration listing, you don't need the intellectual capacity of Albert Einstein to work out the command that sets up the ActiveList. Yep, it's the "ActiveList" command. The format of the ActiveList command is pretty complicated, so we'll start by taking a look at each parameter in turn.

```
ActiveList Zone, x, y, width,↵
height, address, index, flag,↵
paper, pen;[changes]
```

ZONE – The **Zone** parameter is exactly the same as the "button number" parameter that we covered last month when we looked at Interface's buttons. To recap, the Zone parameter is an identifier that must be unique. If you therefore write an Interface program that creates seven different gadgets, each must have a different zone number.

X – The **X** parameter dictates the horizontal position of the ActiveList in pixels. You should be aware, though, that AMOS automatically rounds this parameter down (not up) to the nearest multiple of 16.

Y – Like the **X** parameter, the **Y** parameter is used to control the position of the ActiveList on screen. Once again, any values that you specify are automatically rounded down to the nearest multiple of 16.

WIDTH – The **width** parameter is very similar to the **X** parameter, but instead of being expressed in screen pixels, it must be expressed in characters. It therefore controls the number of characters that the ActiveList will display across the screen.

HEIGHT – The **height** parameter controls the vertical height of the ActiveList. It is, once again, expressed in terms of characters – or, to be more precise, lines of characters. If you therefore specify a value of 20, the ActiveList will be capable of displaying a maximum of 20 elements on-screen at any one time.

ADDRESS – The **address** parameter is a little difficult to explain without first taking a good look at how the contents of an ActiveList are handled. This subject is covered in detail below, so all you need to know for the meantime is that the **address** parameter contains the name of the Interface variable that contains the address pointer to the ActiveList elements array.

INDEX – The **Index** parameter contains the number of the element that is at the top of the visible list of ActiveList elements. If, for example, you had an ActiveList containing 100 elements and you wanted to always

AN EVEN MORE PROFESSIONAL AMOS...

Well, it's taken over two months to arrive, but I've finally managed to upgrade my AMOS Professional to version 1.1. Apart from the obvious bug fixes and enhancements (testing is a lot faster!), I have to admit that I was actually a little disappointed that more features weren't added. Ah well, I guess Europress just wanted to iron out some of the more obvious bugs in the original release. Although Europress claims that it's just around the corner, I'm not quite convinced that the much-talked-about AGA-compatible version of AMOS Professional is going to be with us that soon. As for the compiler – well, I don't think I'll be deleting my aged AMOS Compiler just yet...

It's nice to see that Europress has just released two other updater disks for AMOS 1.34 and the AMOS Compiler/3D extensions. The AMOS 1.34 updater takes AMOS up to version 1.35. Don't get too excited though – this latest version offers absolutely no enhancements whatsoever. The only change offered by version 1.35 is compatibility with the Amiga A1200/A4000 series – according to the documentation, switching between Workbench and AMOS using the "Amiga+A"

AMOS Action

This month, among other things, Jason Holborn continues his tour of AMOS Pro's Interface language with a look at Active Lists and Scroll gadgets.

Note: the symbol ↵ in listings means *do not* type a return – the line is simply too long for our narrow columns

start with the last 10 displayed, you would enter an Index number of 90.

FLAG – The **Flag** parameter is used to fine-tune the ActiveList and how it performs. By passing the appropriate value, this can make the ActiveList react to the mouse instantly, for example, without the user having to click the left mouse button. Check out section 09.03.10 in the AMOS Pro manual for more information on this useful parameter.

PAPER – The **Paper** parameter controls the background colour used by the ActiveList.

PEN – Not surprisingly, the **Pen** parameter controls the colour of the characters displayed within the ActiveList.

> "The scroll gadget changes what part of the ActiveList is displayed."

CHANGES – The most interesting and certainly the most potentially powerful option of all is the **Changes** parameter that is essentially an Interface program in its own right. The **Changes** parameter contains a list of Interface instructions that are performed whenever the user clicks on any one of the elements within the ActiveList. Most of the time this will remain blank.

BUILDING AN ACTIVELIST

Before you can run an Interface program that creates an ActiveList, you must first create and then build up an array that contains the elements used by the ActiveList. Both of these tasks simply use standard BASIC instructions – the **"Dim"** command is used to initialise the array, and its contents are then pulled in using a simple loop that reads strings from a list of **data** statements. You could quite easily store the ActiveList on disk and then use AMOS's file handling capabilities to read the data in – particularly handy if you're writing a database or address book program.

Once the array has been set up, you need to tell Interface where it can be found in memory. This is pretty straightforward too – all you need is the **"Array"** command that returns the address of an array which can then be written into an Interface variable using the **"Vdialog"** function. This Interface variable is then used by the Interface **"ActiveList"** command to build the ActiveList from your data. Here's the format of the line in question.

```
Vdialog(ChannelNumber,0) = ↵
Array(ArrayName(0))
```

VSLIDERS AWAY!

Finally we come to the subject of scroll gadgets, those incredibly useful gadget types that make ActiveLists so much friendlier. Scroll gadgets are created using one of two commands: **"VSlide"** or **"HSlide"**. Both perform the same function but with one major difference – **VSlide** creates vertical sliders and **HSlide** creates horizontal sliders. For the moment, though, let's take a look at the **VSlide** command. This is the form it takes:

```
VSlide Zone, x, y, Width,↵
Height, Position, Trigger, ↵
Total, Step;[Changes]
```

ZONE – Exactly the same as the **Zone** parameter used by the **ActiveList** command. Once again, the **Zone** parameter must be unique.

X – The horizontal position of the top left hand corner of the scroll gadget, expressed in terms of screen pixels.

Y – The vertical position of the top left hand corner of the scroll gadget. Once again, this should be expressed in screen pixels.

WIDTH – The **width** parameter controls the horizontal size of the scroll gadget. Unlike the **ActiveList** command, this should be expressed in screen pixels.



ActiveLists and Scroll gadgets can make your AMOS Pro routines easier to use and much friendlier, and they aren't too hard to program either!

HEIGHT – Like the **width** parameter, the **height** parameter controls the vertical size of the scroll gadget. Be careful when defining these two parameters – if you want to create a **VSlider,** the width should be considerably less than the height and vice-versa for a **HSlider.**

POSITION – The **position** parameter is a value that controls the default position of the scroll gadget "handle" (the bit that you actually drag).

TOTAL – The **total** parameter controls the maximum value that can be returned by the scroll gadget. This can be handy for restricting the movement of the gadget.

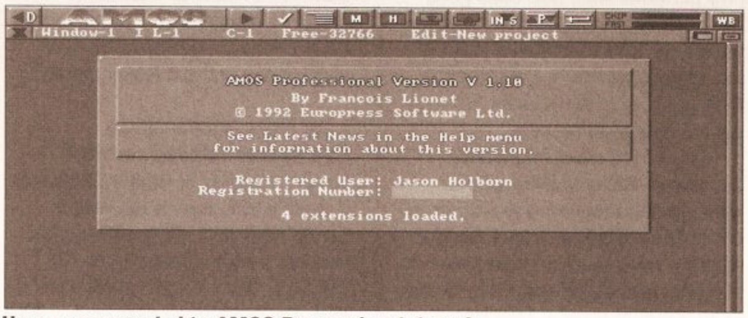
STEP – The **step** parameter controls the size of the increase or decrease in the current scroll gadget position when the user clicks not on the handle itself but on any area above or below the handle within the boundaries of the scroll gadget.

CHANGES – Although the **[Changes]** parameter isn't that important when applied to the **ActiveList** command, it becomes essential if you want to tie a scroll gadget to your ActiveList. Like its ActiveList equivalent, the **[Changes]** parameter contains a small Interface program that is performed each time the scroll gadget is used.

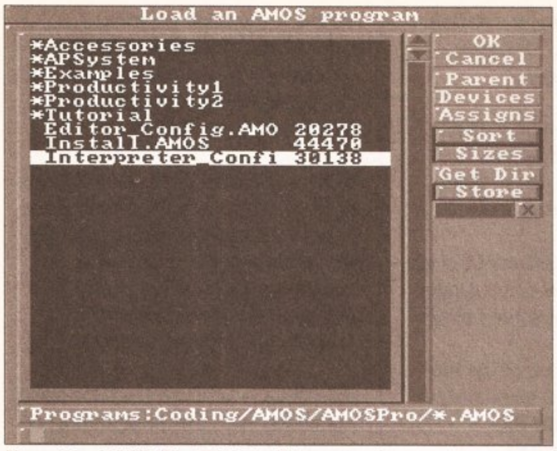
In order to get an ActiveList to change in response to the user moving a scroll gadget's handle, the **VSlide** command's **[Changes]** parameter must be set up to inform the ActiveList that the user has moved the scroll gadget. This is done by linking the two commands together using two commands – **"ZoneChange"** and **"ZonePosition".** These two commands instruct the

combination didn't work too well under AmigaDOS 3.0. This problem has also been fixed with AMOS Pro.

The AMOS Compiler and 3D extensions have also been updated to work under AMOS Professional. Now call me a sceptic, but surely there's little point in releasing an updated version of the aged AMOS Compiler if the new AMOS Pro compiler is so close to release? Is Europress simply protecting AMOS users' investments or is it trying to tell us something indirectly? As I said, I wouldn't trash that AMOS Compiler quite yet!



Have you upgraded to AMOS Pro version 1.1 yet?



Even the AMOS Pro Editor's file requester uses Interface's ActiveList and Scroll gadget facilities. If you don't like the standard file requester, you could write your own!

ActiveList to constantly monitor the position of the scroll gadget's handle. Whenever its position changes, the ActiveList will automatically change too.

NEW LICENSEWARE

Sandra Sharkey's Licenseware scheme is continuing to prove popular among AMOS programmers with the release of some very impressive titles. If you want to see the sort of things that AMOS is really capable of when placed in the hands of real professionals, then Licenseware software is worth investigating. Sandra's scheme awards the programmer of the software that you buy (most disks only cost £3.50!) a share of the profits, so you not only get a great AMOS program, but you can also feel good in the knowledge that the programmer has benefitted too! Here's a quick look at one of the latest Licenseware programs to hit the streets.

FLEXER

Disk L130

If you thought that AMOS was only good for games programming, then you should check out Andrew Forrest's brilliant *Flexer* program. *Flexer* is a very powerful card file database that more than matches the ease of use and power of any commercial card file database program. Andrew has gone to great lengths to make sure that *Flexer* not only performs well, but looks good too – although not quite in the same league as a true Workbench-based database program, it emulates the look and feel of Workbench 2.0 with surprisingly good results.

One of the most impressive aspects of *Flexer* is the fact that although the program was written in AMOS (with a splattering of Devpac code for good measure), Andrew has actually managed to get *Flexer* to run in an Intuition screen. How he managed to achieve this is beyond me, but it just goes to show that anything is possible if you've got the knowhow. (If enough of you write in wanting to know the secret, maybe we can persuade Andrew to tell all!)

I've never really been a fan of PD business software, but I have to admit that *Flexer* is a different ballgame altogether. If you're in the market for a database, then save your money and get *Flexer* instead.

• For more information on Licenseware software, contact Sandra Sharkey at Deja Vu Software, 7 Hollinbrook, Beech Hill, Wigan, Lancs WB6 7SG. Alternatively, you can call Deja Vu direct on ☎ 0942 495261. Don't forget to tell them that *Amiga Shopper* sent you! AS

NEXT MONTH • NEXT MONTH

Our Interface tutorial continues next month with a practical project that all AMOS Pro applications programmers will find useful. If you've ever wanted to write your own file requester, then don't miss next month's issue... (If you want to make certain, take out a subscription using the handy card in this issue! End of plug...)

LISTING • LISTING • LISTING • LISTING • LISTING • LISTING

```
' *** AMOS Pro Interface ActiveList Demo ***
' *** Written by Jason Holborn ***
' *** For Amiga Shopper Magazine ***

' *** Setup array and screen

Dim ARR$(20)
Screen Open 0,320,200,8,Lowres
Flash Off : Curs Off : Colour 1,0
Palette $0,$70,$FF0,$FFF,$F00

' **** The Interface Program

A$=" BAse 0,20; "
A$=A$+" ActiveList 1,16,16,20,15,0VA,0,4,0,3;[] "
A$=A$+" VSlide 2,180,16,16,120,0,1,5,1;[ZoneChange ↵
   1,ZonePosition;] "
A$=A$+" BUtton 3,200,16,100,12,0,0,1; "
A$=A$+" [INk 4,0,0;GraphicSquare 0,0,100,12;PRint 14,3,↵
   'QUIT DEMO',2;][] "
A$=A$+" EXit; "

' *** Open dialog channel, store address of array in 0VA
' *** and run our interface program

Dialog Open 1,A$
For C=0 To 19 : Read ARR$(C) : Next C
Vdialog(1,0)=Array(ARR$(0))
D=Dialog Run(1)

' *** Monitor our three gadgets
' *** Loop continues into 'QUIT' button is pressed

Repeat
POS1=Rdialog(1,1) : Rem ** ActiveList
POS2=Rdialog(1,2) : Rem ** VSlider
POS3=Rdialog(1,3) : Rem ** Button
Locate 2,1 : Print "ActiveList = ";POS1;Space$(1)
Locate 2,2 : Print "HSlider = ";POS2;Space$(1)

If POS1<>-1
Locate 2,21 : Print "Selected = ";ARR$(POS1);Space$(10)
Else
Locate 2,21 : Print "Selected = None"
End If
Until POS3=1

' *** Shut down interface program and quit

Dialog Close 1
End

' *** Our Active List Data
Data "Cliff Ramshaw"
Data "Dave Green"
Data "Diana Taylor"
Data "Stuart Anderton"
Data "Jason Holborn"
Data "Mark Smiddy"
Data "Jeff Walker"
Data "Bob Liddil"
Data "Gary Whiteley"
Data "Jolyon Ralph"
Data "Andy Storer"
Data "Paul Overaa"
Data "Wilf Rees"
Data "Charlotte Hemmings"
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Data "Kelly Sumner"
Data "Georgina Brown"
Data "Irving Gould"
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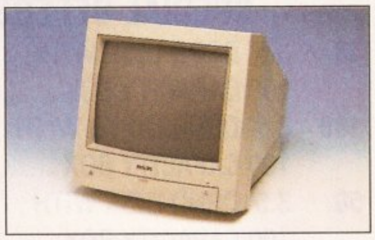
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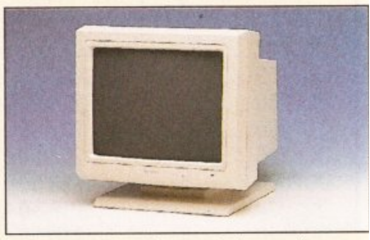
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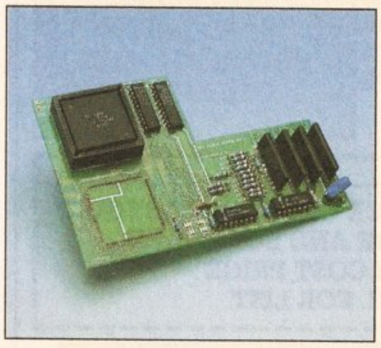
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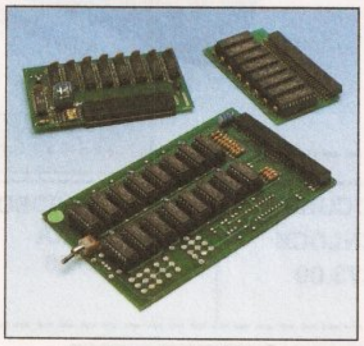
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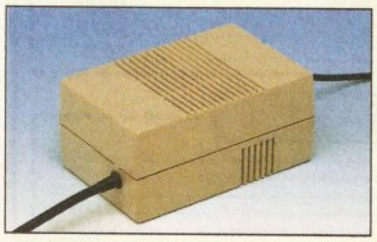
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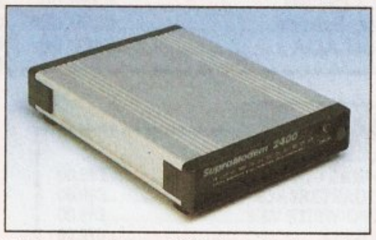
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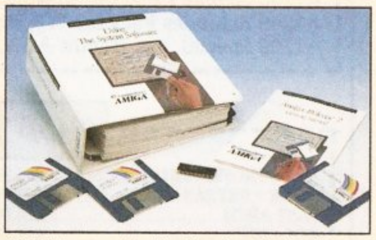
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VISA

Access

CRACKING the shell



This issue, Mark Smiddy offers an introduction to scripts for newcomers to AmigaDOS

Learning AmigaDOS can be a long and arduous process, and one of the best ways to learn is by example. As a basic DOS language it is one of the most powerful around, but its programmability is what puts it in a league of its own and this is why this series concentrates so heavily on that aspect. However, it has been some time since I last examined the basics of scripts – so this month I'll go over the techniques again.

AmigaDOS scripts are little more than a series of AmigaDOS commands – most of which can be executed from the Shell and from Workbench 1.3 – and scripts can be used just like normal commands. In addition, scripts offer several important advantages over the manual approach:

• They save time. One command or hundreds of commands can be contained in a single file – it makes no difference.

• Decisions are automatic. A correctly-programmed script takes over all the hard work of trying to work out what to do in any set of given circumstances. (The level of error-checking depends on what the script does.)

• They are easily modified. Unlike a pre-programmed command, a script can be modified to suit specific needs.

In MS-DOS such programs are referred to as "batch" files – because they do a whole batch of things at once. AmigaDOS programs are called scripts because of the analogy with a television programme: the series of events which take place during the programme are defined in the script. (The AmigaDOS naming convention is therefore more true to form, if a little difficult to remember.)

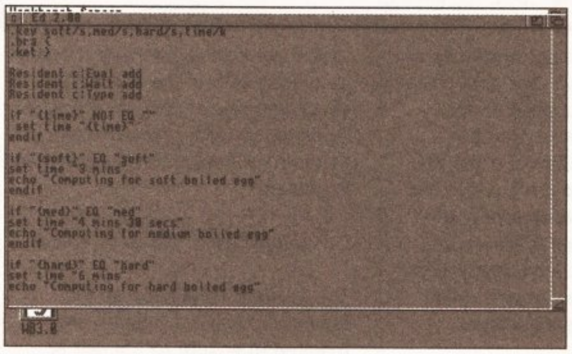
Before we go further, it is worth mentioning speed. AmigaDOS commands – even simple ones – are not especially fast. While this is rarely obvious from the Shell, it becomes all too apparent when scripts are being used. Don't expect your scripts (or any of those in this series) to run at the same speed as AmigaDOS commands – they won't, but they are a lot more convenient than doing the same job manually.

With a little imagination, scripts can do some tricks which would not be practical to enter directly. One such example is presented here as a complete listing. It's an electronic egg timer which can be used to time boiled eggs to perfection. Although that may sound like something you associate with red noses or even mutant tomatoes, it actually illustrates many of the basics in fine fashion. (Next month's cover disk carries a sophisticated suite of scripts, *Pest3,* which do the same job – only with more pizzazz.)

You can think of a script as a story: it has a beginning, a middle and a conclusion. The beginning (or head) gets the arguments from the command line and initialises any variables; the middle (or body) does the actual work; and the end (or tail) tidies up. Complex scripts can be further sub-divided into chapters, although these are less well-defined than they would be in a real book.

Here is the EggTimer script explained in such a fashion. Line numbers are shown alongside each sub-heading in brackets.

Note: the symbol ↵ in listings means do not type a return – the line is simply too long for our narrow columns



The basic question in EggTimer is how hard you want your egg...

EggTimer (or "Ripe tomato boils an egg").

Prologue (1–3): Our user is given the choice of a soft, medium or hard boiled egg and the option to specify his own time.

Chapter 1 (4–6): Sets the scene by pre-loading some AmigaDOS commands into memory.

Chapter 2 (7–9): If the user wants to set his own time, that can be done here.

Chapter 3 (10–21): If the user has defined an eggy preference, we'll set this up and confirm it here.

Chapter 4 (22–23): Prompts the user to start the cooking and wait for the specified time.

Chapter 5 (24–32): Time's up! The screen is flashed and the user receives a message and flashing screen to say his dinner is cooked.

Epilogue (33–36): Unloads the AmigaDOS commands and cleans up the mess.

Now, this may all sound a little far-fetched, but it illustrates the procedures involved without describing the technicalities. All scripts work like this but in this series we usually confine ourselves to a more conventional line-by-line approach. At the end of this article you should be able to read the descriptions and work out the various stages for yourself – even when a particular command or command grouping escapes you. Tables 1, 2 and 3 offer a brief guide to the specific script commands.

WRITING YOUR SCRIPT

All your scripts should be stored in the **S:** assignment – the S directory on your boot disk. This will allow easy access to the scripts whenever you want them – and, given that they are only small text files, they do not take up a lot of space. The scripts may be created with an AmigaDOS editor or even a word processor – but if you use this approach be sure to save the text as ASCII (that is, plain text with no style commands) with line feeds after paragraphs.

Generally speaking, using the AmigaDOS full-screen editor is the safe option. For example, to create or edit the EggTimer script listed here you would enter:

```
1>ED S:EggTimer
```

When ED appears you can start entering the text as listed – without line numbers. The numbers are supplied for two reasons. First, they allow the text to be described line by line, and second, they show where each line starts. It is quite common for lines to wrap in listings because printed columns are of limited width. These are clearly marked by a special character, ↵, and you must not enter a return or line feed until the end of the listing line.

Keep typing and let your word processor or editor ED do the rest. If a line wraps in ED, it will be split, and you will need to join it using the <Esc>+J sequence. This is not common, and to help you wherever possible all AmigaDOS code will be included on the cover disk.

TABLE 1: AMIGADOS SCRIPT COMMANDS

IF: Conditional test opening command. True follows to next instruction; false jumps (always forward) to next ELSE or ENDIF.

ELSE: Control is transferred to this point when the IF test is false; else it is forced to the next ENDIF.

ENDIF: Conditional text closing command. Terminates the current IF...ENDIF or IF...ELSE...ENDIF structure.

SKIP: Unconditional branch structure. Control is forced to jump to the named label – optionally backward. SKIP fails if a second script is called directly within the loop.

ENDSKIP: Rarely-used command to terminate a SKIP branch.

LAB: Marker. Defines a label to be jumped to; otherwise ignored.

The EggTimer script has the following synopsis:

```
[EXECUTE] EggTimer ↵
 [SOFT|MED|HARD] [Time=<n ↵
 mins|secs>]
```

A command's synopsis is an alternative way of describing what it expects to find on the command line. There are a few conventional ways of writing synopses:

- Commands or options shown in square brackets "[]" are usually switches and can be supplied as necessary.
- When arguments are shown separated by a bar "|" only one may be supplied.
- Arguments shown in angle brackets "<>" are obligatory.
- Keywords are optional arguments but must be supplied along with their own argument.

In addition, scripts are often preceded by the EXECUTE command shown in square brackets – this shows that the command may be required in early AmigaDOS versions (those prior to v1.3). In modern AmigaDOS – the one you are (or should be) using – there is no need to enter the execute command since it can be called by the system automatically, provided the "S" protection bit is set. You can do this universally, as it were, for all existing scripts like this:

```
1>SPAT PROTECT S:#? +S
```

ED only sets the basic read/write permission, so you should protect any new scripts in the same way:

```
1>PROTECT S:EggTimer +S
```

Therefore you can execute the script like this:

```
1>EggTimer Hard
```

or

```
1>EggTimer Time="3 mins"
```

Now let's take a proper look at how the EggTimer script works. For the sake of any beginners this script is compatible with v2.0, although it does not feature some of the tricky functions usually associated with this series. Apologies to hardened AmigaDOSsers – your treat is nigh.

TABLE 2: SCRIPT HEAD OPERATORS

These must be placed before AmigaDOS commands are interpreted.

.KEY: Provides argument parsing similar to that found within AmigaDOS proper. /A, /S, and /K argument types may be used.

.BRA: Alters the default opening bracket character.

.KET: Alters the default closing bracket character.

.DEF: Gives the default setting for an argument if one is not supplied.

.DOLLAR: Changes the dollar symbol.

1. Defines the argument template. Notice how this looks just like a template for a real AmigaDOS command – it's processed in a very similar way too. In the synopsis described above the switch options Soft, Med and Hard are shown as a combined argument – but only *one* of these should be supplied at any time. It is important to note the AmigaDOS parser will *not* check for the presence of too many or too few switches. Such error-checking will usually be performed in the script – that is, you have to include it yourself – but it has not been implemented here to keep the listing simple.

2. Changes the default opening angle bracket character to "{".

3. As Step 2 for the closing bracket.

4–6. Adds EVAL, WAIT and TYPE to the resident list. This pre-loads the commands from disk and makes them available in system RAM, where they can be executed faster. This technique is also handy when a disk-based command is used more than once in a script.

7. This checks if the user has entered a time via the **time** keyword. The exact position of this conditional test is not crucial, although it should be placed early in the script. The exact workings of this line are a little complex, so let's examine them. Assume you had entered a command line thus:

```
1>EggTimer Time="3 mins"
```

The keyword **Time** absorbs the argument "3 mins" (quotes are required to ensure all the text is taken in). This process "sets" the internal script variable "time" to "3 minutes". This can be picked up at any time by enclosing the name in special brackets – set as { and } in this script.

AmigaDOS reads this line as:

```
IF "3 mins" NOT EQ ""
```

Similarly, if you do not enter a time keyword, AmigaDOS reads this:

```
IF "" NOT EQ ""
```

This statement checks if the expression on the left does not match the expression on the right – it seems a little backward at first, but it will all become clear shortly. If the line passes the test (first example – "3 mins" does not equal "") the script continues at the next line. If the test fails, it jumps to the closest ENDIF – at Step 9 in this case.

8. Sets a local environmental variable to the value defined by the keyword. Remember, this line is only called if a keyword and argument for "time" are supplied. Variables are like temporary containers. Local variables are held in system memory, making them convenient for private storage. It is not possible to alter a local variable directly though, and you need to bear this in mind when deciding which type to use.

9. Closes the IF...ENDIF construct opened at Step 7. Put simply, this "command" acts as a place marker to inform AmigaDOS where to jump to when the "IF" test fails.

10–13. These lines check for the presence of the *soft* option on the command line (no pun intended). The position of this test is crucial in case you supply more than one switch. As programmed the switches have priority over the keyword, and of those, the *hard* option is preferred. If soft has been supplied the variable "time" is set to three minutes – you can set this lower if you like runnier eggs or higher if you have oversize

TABLE 3: VARIABLES

These may be used anywhere in the script after: KEY, BRA and KET.

<arg>: Script variable. The name of an argument is placed between angle brackets or brackets defined in .BRA and .KET statements.

<$$>: Reserved variable. Inserts the process number at any point in the script. Brackets may be changed using ".BRA" and ".KET". Dollar symbols are altered with the ".DOL" command.

LISTING 3 • LISTING 3 • LISTING 3 • LISTING 3 • LISTING 3 • LISTING 3 • LISTING 3 • LISTING 3 • LISTING 3

```
EggTimer
;Line numbers are for reference only

1. .key soft/s,med/s,hard/s,time/k
2. .bra {
3. .ket }
4. Resident c:Eval add
5. Resident c:Wait add
6. Resident c:Type add
7. if "{time}" NOT EQ ""
8.  set time "{time}"
9.  endif
10. if "{soft}" EQ "soft"
11. set time "3 mins"
12. echo "Computing for soft boiled ↵
 egg"
13. endif
14. if "{med}" EQ "med"
15. set time "4 mins 30 secs"
16. echo "Computing for medium boiled ↵
 egg"
17. endif
18. if "{hard}" EQ "hard"
19. set time "6 mins"
20. echo "Computing for hard boiled ↵
 egg"
21. endif
22. ask "Place egg in boiling ↵
 water*nThen press <Return>"
23. wait $time
24. eval >env:bleep{$$} 7 lformat ↵
 "Dinner's up... %c"
25. setenv count{$$} 10
26. lab loop
27. echo "$bleep{$$}"
28. eval >NIL: $count{$$} -1 to ↵
 env:count{$$}
29. if val $count{$$} eq 0
30.  skip end
31.  endif
32.  skip loop back
33.  lab end
34.  unset time
35.  unsetenv bleep{$$}
36.  unsetenv count{$$}
37.  Resident c:Eval remove
38.  Resident c:Wait remove
39.  Resident c:Type remove
```

ARCHIVE BOTHER • ARCHIVE BOTHER

Reader's letters suggest that people have been having trouble with the archiving program used on early *Amiga Shopper* cover disks. This was necessary to cram a reasonable amount of information on there. Although this has been fixed now, earlier disks may still prove troublesome. You can access the AmigaDOS section by copying the archive and *LhA* (the archive application) into RAM like this.

1. Open a shell and enter this:

```
1>RESIDENT C:COPY
```

2. Insert the *Amiga Shopper* cover disk into the internal drive and enter:

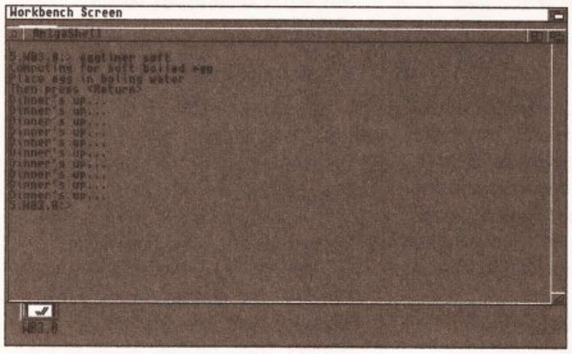
```
1>CD RAM:
1>COPY DF0:#?DOS#? ""
1>COPY DF0:C/LHA ""
1>LHA e AmigaDOS
```

3. The scripts can now be copied to the *S:* assignment on your Workbench disk – you may like to do this as an exercise. (No cheating if you have Workbench 2.)

ones. An ostrich egg, for instance, will take a lot longer and a much larger pan.

14–17. Sets the time for an average cooked egg. Typically this should be enough for a nicely-done size three egg with a slightly hardened yolk. Of course you can just adjust this timing to your own taste.

18–21. Like the previous brace of



You too can have this friendly little conversation with your Amiga...

options, this sets the timing for a hard boiled egg – probably enough to kill off any trace of Salmonella. This switch overrides all others if it is supplied.

22. This pauses the script and waits for the <Return> or <Enter> key to be pressed. This command is normally used to check for a yes or no answer, but it does this job just as easily. The "*n" enclosed in the text forces the Amiga to print a line break so the text appears split over two lines.

23. Waits for the time determined by the contents of the variable **time**. If, for instance, you had asked for a soft boiled egg, AmigaDOS would read this as:

```
WAIT 3 mins
```

You can insert the contents of any user-defined (environmental) variable by prefixing its name with a dollar symbol as shown here. The dollar symbol is a special variable operator and is not affected by the ".DOLLAR" operator.

Note that if a badly formed command line is used, the WAIT statement will kill the script dead in its tracks. This can be avoided – but it is too bothersome to warrant inclusion here.

24. This line is actually simpler than it looks and uses one of those little tricks of the trade. EVAL is generally thought of as being a mere calculator, although it is capable of much more than that. This line splits into two distinct parts:

```
EVAL >env:bleep{$$} 7
```

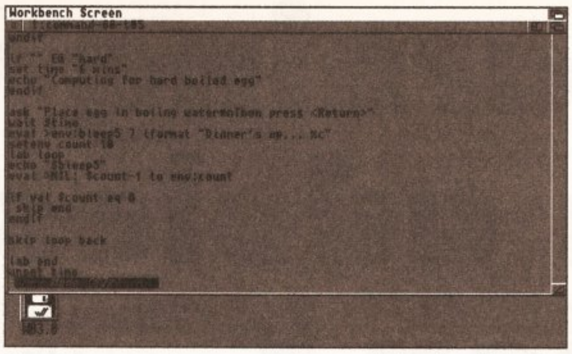
This calls the command and makes it write a global environmental variable. The variable's name is taken from the text "bleep" plus the number of the Shell process executing the script. If the process was (say) 2, AmigaDOS reads the line as:

```
EVAL >env:bleep2 7
```

In this form, this would usually send a text string to the variable – just like ECHO. However, the second part of the command does something special:

```
lformat "Dinner's up... ↵
%c"
```

This defines the output string as a



Once the parameters are set, the program can begin talking to you...

message plus a non- printing character code – 7. In ASCII this code is called "BELL" and is used to flash the screen, or more usually, sound the terminal bell. (The screen flash is a peculiarity of the Amiga: under Workbench 3 you can change the simple bleep to a sampled sound.) In other words, when this variable is displayed the message will appear and the screen will flash.

25. Sets a global variable "count" to 10. Note how "{$$}" is used to attach the process number. This makes the name unique, so avoiding clashes if it is executed from several Shells at once. The actual value determines how many loops will be made later on.

26. Marks the current position in the script.

27. Prints the message described at Step 24 and flashes the screen.

28. Decrements the counter variable "count". Expanded, this line might read:

```
eval 10 -1 to env:count2
```

Therefore, the variable "count2" receives the result of 9.

29. Checks if the value of "count2" is equal to zero. If it is (TRUE), control continues at Step 30; otherwise it jumps to the next ENDIF at Step 31.

30. The script reaches this point when the counter has reached zero and jumps to Step 33.

31. Terminates the IF...ENDIF construct formed at Step 29.

32. Jumps backwards to Step 26 – the label "loop". "Backward" jumps are quite slow because they're not really backward at all – the script starts from the beginning and works down looking for the label. Generally these are placed at the start of a script wherever possible, but it makes little difference here.

33. Marks the bail-out point for the SKIP command defined at Step 29.

34–36. Clears the local variable "time" and the global variables "bleep" and "count". All well-behaved scripts should do this to restore allocated memory, although few bother (even mine) because it adds to execution time. Small variables take little space and they can be re-used time after time.

37–39. Removes the resident commands from the system list and frees up memory. This *must* be done – otherwise each successive invocation of the script will add more copies of the commands and waste memory.

In next month's Cracking the Shell, I'll be delving further into the features and function of AmigaDOS by looking at *Pest 3.1* – a whole new world in automatic appointment scheduling. *Pest 3.1* is easy for beginners yet powerful enough for the most demanding user.

In the meantime, if you get stuck with anything described here, drop me a line care of *Amiga Shopper* or contact me directly via the on-line service CIX as "SMIDOID". AS

JARGON BUSTING • JARGON BUSTING

AmigaDOS: Amiga Disk Operating System. The software controlling the hardware. Strictly speaking, DOS in this instance means "device operating system", although this is less easy to say.

ASCII: Pronounced "askie". Abbreviation for American Standard Code for Information Interchange. An agreed numbering system used to represent letters, numbers and other characters.

CIX: Compulink Information Exchange. A cost-effective conferencing system used by most major computer journalists. Available to anyone with a modem, telephone and unlimited finances to pay the phone bills.

Device: A piece of hardware, either external or internal (printer, disk drive and so on), connected via an interface.

Learning with an adolescent alien

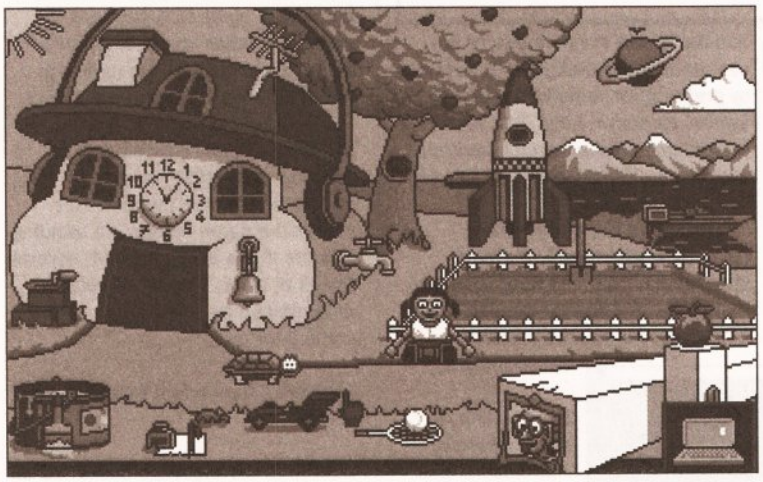


"Literacy" and "numeracy" sound like such daunting things. Wilf Rees looks at Europress's new ADI Junior packages, which promise to make it fun to learn to read and count.

It was only a few months ago that Europress Software introduced ADI, a rather likeable alien who, treated nicely, would prove very obliging in assisting anyone with Maths and English. The ADI packages were aimed at the 11 to 15 range, and were extremely well written, offering a unique perspective on addressing these subjects. (We said as much when we looked at them in issue 18 – if you missed that, turn to page 107 and order yourself a copy of that issue.) Now there are four new packages out of the same stable, aimed directly at the 4-5 and 6-7 year old age ranges, and targeting reading and counting.

THE RIGHT ENVIRONMENT

Europress has adopted the same practice with these new packages as with the others: an "Environment" disk needs to be loaded first, and this offers a point-and-click interface to the program contents. The "environment" is very much in the Europress Software house style, and I must say there's plenty of thought and planning evident in what is really a superb suite of programs. It may well be aimed at the 4 to 7 age range, but honestly, folks, I spent three hours just playing and laughing at the extremely amusing antics of the various sprite requesters on each main menu screen.



This is *ADI Junior's* Environment screen, filled with various objects, animals and characters. Some do nothing, some perform hilarious animations, others perform an animation and then lead into an application. The key object is the door of the house, which is the pathway into a particular specialisation, such as "Reading 4/5". The child can discover which object does what – by logical association, the clock, for example, leads to the "time" exercises, and so on

The Environment disk loads a visual menu. There are no obvious indicators to the various sub menus, so the child is left to explore the assorted objects on the menu and discover the outcome. An example of this is the toy car in the foreground. Once clicked on, it moves off in an animation. This action sets in motion the loading of a car racing game, which enables you to design a track, compete against a friend or the computer, and access a "magic wand" feature which generates random designs.



The loader screen of *Count 4/5*. Again there is so much going on that it is impossible to list it all, but all the individual applications are inter-related, and principles are reinforced continually by references to previous mistakes, enabling the child to build up understanding

Another example is the "Portraits game". This is a database of assorted facial features – noses, ears, mouths, chins and eyes – which can be selected in any permutation to produce some really idiotic-looking characters. Like all of the various subroutines on the Environment disk, this game has a structure which is well considered and usefully hierarchical. You select difficulty levels by choosing between three juggling clowns, each with more balls in the air than the last. At the most difficult level, a brief glimpse of a constructed face appears, and then turns to a silhouette. The child has to identify the constituent parts and reassemble the image. With all of the levels, success is rewarded by the appearance of ADI the alien, who materialises and jumps up in the air whooping with joy. Get it wrong and he appears, followed by some unrecognisable muttering obviously in his native tongue.



Very much in the Europress Software house style, these two packages are closely linked to National Curriculum requirements, and will serve to reinforce the learning methods your children are likely to encounter in school

At any stage, in any option, you can choose to stop the current application and return to the main Environment menu. This is one of my favourite parts of the whole package, because instead of a simple yes/no requester, ADI appears in two adjacent boxes. In one he shakes his head side to side in a "no" gesture, and in the other, up and down to confirm "yes". Maybe a small feature, but everywhere this attention to detail is reinforced. I found nine different applications on the Environment disk, as well as numerous little animations. One specific animation which I countlessly repeated is the slow tortoise which ambles across the screen. If you point and click on it, it rolls over on its back and starts giggling. It then rolls over again onto its feet and raises the rear end of its shell, from where a rocket launcher appears, fires up, and proceeds to tear away off the side of the screen. I love it!

ENVIRONMENTALLY ACTIVE

The other activities within the Environment are:

- **The clock.** A feature for explaining time, both telling the time and helping to convey the principles of the passing of time.
- **The garden.** This is a really nice feature – not so much an active application, but more of a reference. Children can choose from a selection of seeds and plant them in the garden. Then, as they return to the main menu and pursue another application, the seeds begin to grow. As time passes they grow into fully-developed flowers, which can be collected, counted and recorded as bunches present in a vase. The

program retains a record of the number of bunches grown and collected.

- **The note pad.** A very simple introduction to word processing, using only four commands – there are icons for upper/lower case, erase, activity start, and exit. There's a fully-working keyboard on-screen, and a display area for entered text is directly above the keyboard. In this case there is a fourth difficulty level – a clown without any balls to juggle indicates a "Discovery" level, where there is no measure of performance or difficulty.
- **Picture Construction Game** is a pre-reading pattern-matching activity. Various images are provided in a menu, and you get a choice of two backgrounds. Any of the images can be picked up and placed on the backgrounds, and the completed image can be saved to disk. As the difficulty increases, the child is confronted by either shapes outlined in the landscape, which need identification in the menu, or the word for the missing object which must be chosen from the menu.



The main menu for *Read 4/5*. Again there are multiple options within the screen, offering lots of language-building exercises and ensuring that the child fully understands each stage before moving on to the next

- **The graphics palette.** As might be expected, there is a drawing and painting activity, which you activate by clicking on the pot of paint in the Environment picture. Each subsequent difficulty level introduces additional facilities to the package, and there is a save facility at all levels to keep files. It is capable of simple images, but this is a very limited activity, and probably the weakest of them all.
- **The puzzle game** is a form of jigsaw puzzle, in which pictures are cut up into rectangles and arranged randomly around the screen. Increased difficulty levels simply mean more pieces – 9, 12 or 16. One space is blank, and this is not available until all of the other pieces are in their correct places. You work by pushing pieces around into blank spaces, or by clicking and moving.
- **Breaking bricks game** is a version of the classic *Break-out* game, where a bat is used to bounce a ball onto bricks, gradually eliminating them. Assorted special bricks carry out specific functions, such as exploding and taking others with them. Again, there are difficulty levels present, offering more complex versions or limited "start again" options.

A LITTLE APPLICATION GOES A LONG WAY

All of the features described are available solely on the Environment disk. Click on the door of the house in the Environment main screen, and you get the choice of moving into one of the special applications available. There are four of these: Reading 4/5 and 6/7, and Counting 4/5 and 6/7. Both subjects have been closely linked to National Curriculum requirements, so parents can feel confident of the the appropriateness of the content. As in the Environment disk, you can move around and click on the main menu screen in each of the Application disks, causing little animations to happen, then a specific routine loads.

Built into the system is a reward and reporting facility. If a child does particularly well at a specific application, then a "sweet" is awarded, presented as a graphical image. This could easily, of course, be translated into reality by the parents. Similarly, on the Environment screen, F10 produces a chart showing current scores at each application. Information is provided on overall number of attempts and number of successful attempts, thus indicating success rate. The number of sweets awarded is recorded as apples on the apple tree on the Environment screen, and there is even a point deducted every time a child switches off the computer without going through the correct exit procedure.



You use the images to move from the loading screen of *Count 6/7*. Select the dartboard, say, and the application loads. First you get a choice of difficulty levels – you choose how many balls the juggler has to keep in the air. Next a dartboard appears and darts are thrown at the concentric rings, each of which is numbered. The task is to add up the total and enter it into a requester box

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MAKING AN IMPRESSION

It's impossible not to be really impressed with this package. It's evident that Europress has taken a lot of trouble to make this suite of programs not just appropriate, but relevant in so many ways. Using the programs, you are repeatedly surprised by thoughtful and sophisticated little touches linking so many of the characteristics together, reinforcing key concepts, enabling you to return to previous errors to test memory, using recurring images in different parts of the suite to establish principles, and so on. The more one looks at it, the more one realises the quality of these packages.



***Read 6/7* has lots of nice touches. Click on the apple and it falls, bounces off a pig and lands in the haystack. Only *then* does an application load. The Help icon – ADI Junior himself – is available on all the main menu screens. The house returns you to the main Environment menu screen**

There is very little on the negative side. Digitised speech on the Environment disk as well as the Application disks might have added to the overall quality. I know that this intention was in the prototypes, but the sheer disk space necessary for the digitised files was considered excessive. I dislike security systems like the one here where you have to look up some data or other in a booklet and enter it, but I suppose this is a necessary evil to combat piracy. One particularly annoying feature is that you are constantly required to change disks, because the program does not recognise a second disk drive. These, however, are trivial elements, causing only minor irritation against a superb package.

If you have children in these age bands and you would like to invest in some software to assist their learning, I can unreservedly say that this is the best I have seen yet. ADI is simply in a class of its own. AS



CHECKOUT ADI JUNIOR

Ease of use ●●●●●
A doddle – a child could use it!

Educational content ●●●●●
Very well considered. Appropriate and relevant.

Features ●●●●○
Virtually all of them are excellent, but the paint package is weakest.

Documentation ●●●●●
Well written in sensible language.

Value for money ●●●●●
At under £20 this is a gift. You got kids? Get ADI.

Overall ●●●●●
As the lady with the long legs says: "Simply the best!"

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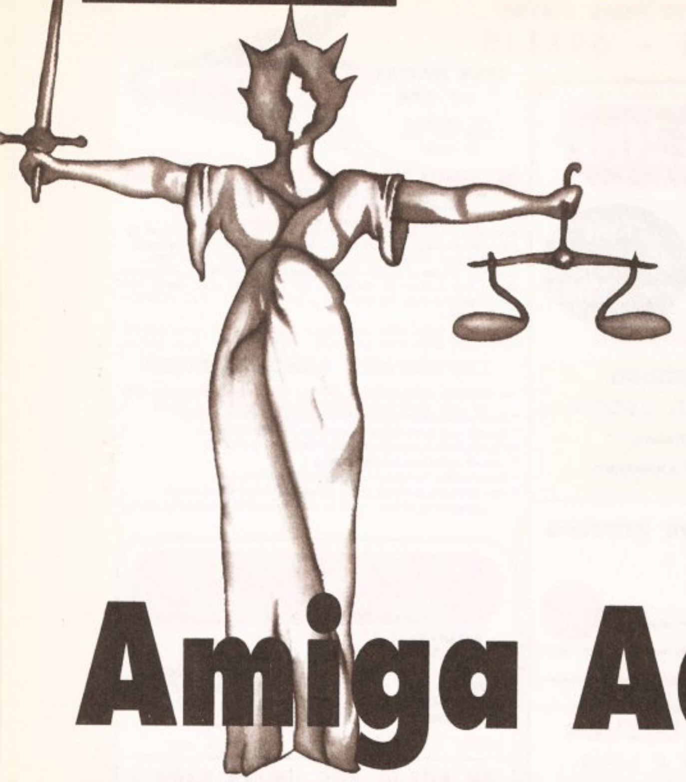
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Amiga Advocate

Are you a careless consumer? Do you know what your rights are when you go Amiga shopping, or what you can do if you think you haven't had a fair deal? Wilf Rees and Andrew Charlton have some helpful advice.

The vast majority of traders are honest, reputable and conscientious in the way they deal with customers. In fact, it is these decent companies themselves who wish to see the trade cleansed of the "fly-by-night", dishonest, and unscrupulous. After all, making a living is difficult enough in a serious recession without "sharp dealers" bringing the trade a bad name. Trouble is, the same scams keep raising their ugly heads, and that is what we are here for. Amiga Advocate is here to advise you of your rights and help you stand up for yourself.

GET WHAT'S COMING

Last issue we looked at taking your case to court and how much it should cost you. (If you missed that issue, turn to page 117.) But even if you win, getting your money may not be straightforward – shady operators don't suddenly start doing the right thing just because they've been

YOUR LETTERS ANSWERED

IT'S IN THE POST

Mr A Ponting of Abingdon ordered a memory expansion from a large supplier on 20 November 1992. At the time of the call, the firm told Mr Ponting it had loads in stock. He paid by Barclays Connect, and the amount was deducted from his account five days later, but his order didn't arrive. He tried "dozens of times" to get through to the company, but always, the line was busy. When he finally did contact it, on 19 December, he cancelled the order and bought a memory expansion locally. The problem was getting his money back. His bank said it would take 60 days before they could take any action. He wants to know why the firm should benefit from interest on his money for 60 days.

Andrew: Most cases such as these revolve around the individual's own bank or building society and its own rules or regulations. Each bank will ask you to sign an application form when you open the account agreeing to be bound by its terms and conditions, which are there to protect you but usually swing in favour of the banks. These will say what time periods apply for paying back money into your account, and usually there is very little else that you can do. In fact, if you pay by debit transfer or credit card, you've probably got to keep on top of the retailer, because if he fails to send off a refund voucher you may find yourself waiting a lot longer than 60 days for your money.

In this case, because Mr Ponting did not agree with the retailer that interest would be payable on late deliveries, he is simply not entitled to recover it without issuing court proceedings. But beware: don't start court proceedings just for the sake of getting interest – you may find that the court not only disallows a claim for interest, but also leaves you to pay your own court costs if the debtor was not given advance warning of your intention to go to court.

The other point here is that a court may feel Mr Ponting is being rather impatient. The normal rule is that mail order companies must send you your goods within a "reasonable" time, but what is "reasonable"? The British Code of Advertising Practice says that "An advertiser should never take longer than 28 days to fulfil an order", but here the buyer seems to have been expecting delivery well before that. The court will ask whether he was reasonable to do so, and that depends on what the company said to him. Many mail order adverts say something like "Allow 14 days for delivery" or even "Goods dispatched within 48 hours", but it is debatable whether this is an enforceable term of the contract. Even if the firm says it has the item in stock, this doesn't amount to an undertaking to dispatch it immediately – if he went to court, Mr Ponting would have to prove that the company promised delivery within a certain time or agreed that "time was of the essence of the contract".

SOLD AS SEEN

Mr Raphuit bought a second-hand Amiga for £150 from a shop in the Tottenham Court Road area of London that deals solely in second-hand goods. When he got the Amiga home, it lasted about four hours before it started continuously crashing, and then finally gave up the ghost altogether. He took it back to the shop, and they drew his attention to a sign on the wall saying "Goods bought as seen". They were rather rude to him, basically telling him to get lost. He still has his receipt, and feels that because the shop told him it was working fine when he saw it in the shop, he has been cheated. They claimed he had abused or mistreated it, causing the fault himself. Has he any redress?

Andrew: Not an easy one, this. Under the Sale of Goods Act, goods sold by a business must be "of merchantable quality" and "fit for the purpose" for which they are sold, and the Unfair Contracts Terms Act 1977 adds that a seller cannot exclude or vary these conditions by an exemption clause or notice, so long as the sale is a "consumer sale" – that is, so long as the buyer is buying the goods for personal and not business use. This is why most signs of this sort these days add the magic words "Your statutory rights are not affected".

The problem here is that the Amiga was working when it left the shop, and a court (or in this case more likely an arbitrator) may decide

YOU CAN BANK ON IT

There are many complaints these days about bank charges, interest and so on. If you are unhappy with the service you're getting, what can you do?

If a friendly chat with your local branch doesn't help, write to the Branch Manager, giving a reasonable time for a reply – seven working days or so is reasonable. Some people advise bombarding the manager with letters and phone calls, so that the bank gets sick of you and tries to resolve the problem as quickly as possible, but this may not be the best way to maintain a friendly relationship with the place.

If you don't get any joy from the Branch Manager, write to the Regional Manager – most banks display an address for complaints somewhere in every branch. Generally speaking, the banks do get it right in the end, although they sometimes take persuasion to get things going. If all else fails, most banks hate adverse publicity and you may find that your local paper is interested in the story and can help in bringing pressure to bear.

All the High Street banks subscribe to the Banking Ombudsman scheme, but you might be disappointed by how limited the Ombudsman's powers are: unless you've actually lost money through negligence, he probably won't be of much help – for a start, he simply doesn't have any power to review policy decisions, and bank charges usually fall under that heading. If you want to try him anyway, your bank will give you the address.

rumbled. So if you've won the case but are having trouble extracting the cash, how do you go about getting what you're entitled to?

The most direct way is instructing the bailiffs – court officials whose job is to enforce the orders of the court (and a decision in your favour is an order telling the other party to pay up; he is therefore known as a "judgment debtor"). You just fill in a form at the court office and pay a fee to the bailiffs to go out on your behalf. (This fee is recovered from the debtor in successful cases.) The bailiff then sends a note to the debtor as a final warning and sometimes this is enough to persuade him to pay up, but not always. The bailiff will try to locate any assets which are worth the cost of removing them and subsequently selling them at auction. If there is anything worth taking, then he will usually take what's known as "walking possession" of the goods.

A walking possession agreement leaves the goods in the debtor's possession for a week or so as a last-ditch opportunity to pay up, or the bailiff returns to remove the goods and take them off to the auction rooms. There are strict rules governing what the bailiff is allowed to take – he can't take "essential clothing" belonging to the debtor or his family (but fur coats are probably fair game), their beds, or goods belonging to someone else, such as a hire purchase company. He also can't remove the debtor's "tools of trade" up to a certain value – the idea isn't to ruin the debtor, after all. One case that I had dealt with related to a small restaurant which wouldn't cough up. Trying to dodge paying, they said that the tables and chairs were tools of their trade. We just removed the chairs and made it into a takeaway.

There are actually two kinds of bailiff, one an officer of the court and the other, called a "certificated bailiff", a kind of sub-contractor, like a debt collection agency. The difference is important because the two kinds have slightly different powers of entry to the debtor's house or premises – though for enforcing judgment debts, the court will almost always use not certificated bailiffs but its own officers. These have the power to enter at any time of the day or night, but not Sunday. The debtor is entitled to check that the bailiff has the correct paperwork with him, but if he refuses entry he can be charged with contempt of court. If entry is refused, the bailiff is not allowed to break in, but may enter through any unlocked doors or partly-open windows, and once inside can break down any inside doors to get to the debtor's property.

Once the bailiff has got hold of, say, the debtor's fax machine, it will be sold at the next appropriate public auction, usually without a reserve price. After the auctioneer takes his cut the rest goes to you and is deducted from the debt. The bailiff will continue until your debt has been repaid in full, if possible.

AN EYE FOR A BARGAIN

On a separate note, the bailiff's auction is the place to visit if you're looking for a real bargain. Quite often items go for ridiculous prices. Most sales are advertised in your local papers and are held once a week or so. However, don't just buy any old piece of computer equipment that's lying around – it may be rubbish. Always look for machines which have been carefully handled (bailiffs are notoriously rough with delicate kit) and can been seen working. Don't turn up five minutes before the sale and expect such service – it pays to go early and get a good look around, or your buy may not turn out to be such a bargain after all. Also beware that most prices are exclusive of VAT and buyer's tax (the auctioneer's cut) of usually 5% – 10%. So your £100 Amiga can cost you nearly £130. AS

that this is enough for it to be of "merchantable" or acceptable quality, considering it was second-hand and cut-price. There is another complication too. If Mr Raphuit inspected the Amiga and either noticed any faults or should have noticed them (and providing the faults were of a kind that he could or clearly should have discovered), the shop could argue that he accepted the machine with its defects, in the same way as someone might buy an unroadworthy car for parts and couldn't then complain because it broke down – in other words, it would be "fit for the purpose" of cannibalising for spare parts. If the shop can establish that the sign was clearly on display at the time of purchase, the sign cannot exclude the seller's responsibility under the Sale of Goods Act but it may be "presumptive" evidence that Mr Raphuit knew what kind of goods he was buying.

The decision could really go either way. Mr Raphuit could try initiating proceedings in his local county court (for details of procedures and costs, see last issue), but he may find himself stuck with his machine anyway. It might be cheaper to check with a reputable repairer and see how much it would cost to have the machine made serviceable. The moral is that it is always up to the buyer to ensure that he fully checks out the machine and is happy that it is in full working order. So, sorry, Mr Raphuit. The surest grounds you may have had would have been to claim that the shop had made misrepresentations, but the sign is unlikely to help your cause and you might have no option but to put it down to experience.

HAVE I GOT A DEAL...

Someone who had better remain anonymous wants to know the legal ramifications of buying something "in a pub" or from any kind of dubious source. What rights of ownership do you have if you buy something, first, knowing it was stolen, or obviously from suspicious sources, or secondly buy something innocently which turns out to be stolen? Can the police reclaim it, even if you paid a fair price for it?

Andrew: If you are stupid enough to buy computer equipment from shady blokes in pubs, then you're likely to get exactly what you deserve, which is getting ripped off. As far as buying something which you know to be stolen is concerned, you may well be prosecuted for handling stolen goods, for which the penalty is up to 14 years imprisonment and an unlimited fine, so there's no way it's worth your while.

If you are unlucky enough to have bought something in good faith that turns out to have been stolen, then I'm afraid you're not going to be much better off. The legal principle is that you cannot acquire the 'title' – that is, ownership – of something if the person who sold it to you does not have title. The rightful owner has the right to reclaim the property and you are usually left out of pocket. You do, however, have the right to sue the person who sold it to you and recover your money from him, but clearly if you bought it from a man in a pub, chances are he's not sitting there waiting for any complaints you may have, so finding him may be a difficult job.

Just as a matter of interest, there are a few exceptions to the rule that someone can't sell you something he doesn't legitimately own himself. One has to do with cars subject to a hire purchase agreement, but two others are relevant here. First, if you buy something from an agent or middleman who scarpers with the money rather than passing it on to the owner of the goods, you do get title to the goods – the original owner's quarrel is with the agent, not with you, so long as the agent was authorised in the first place. The other exception is what's called a "sale in market overt" – if you buy something in good faith at a public and legal market, you can acquire the title even though the seller didn't have it. There are some conditions on this one, but what's interesting is that by long tradition any shop in the City of London is regarded as a "market overt". That's not the whole of London, mind, only the City, and it definitely doesn't include pubs, so stick to the general rule. It is always a good idea to ask to see evidence that the seller is the legitimate owner – ideally the receipts from when he bought the item. If he starts making excuses, start getting suspicious. It isn't worth the risk of ending up out of pocket.

SEND THE BOYS ROUND

A comment from the other side. A letter from a small one-man shop in the North-West asks about recovering a computer from someone who paid with a cheque that bounced. When the dealer went round to the buyer's house, his mother kept saying that her son would come in the next day and settle up, but he has failed to do so despite a number of promises. Not quite a straightforward situation, because the shop is in a small community, where everyone knows each other, so the shopkeeper says he doesn't really want to involve the police if at all possible.

Andrew: Well, a bounced cheque does in fact constitute a criminal offence in some circumstances, but it really doesn't make too much difference because most police forces won't prosecute on such offences, so there's not much point in going to the police anyway. The best thing you can do with a bounced cheque (apart from framing it) is to write to the debtor saying that you give him formal notice of dishonour and require payment within, say, seven days. If you don't get any joy then you must send a couple of big lads around, or else go to the County Court – for details of this, see last issue. Is it worth staying quiet if you're out of pocket? I doubt I would.

IMPORTANT!



Jason Holborn shows you how to randomly access any file using ARexx's powerful Seek() function.

Welcome back to the section of *Amiga Shopper* that manages to refresh parts other columns do not reach. Or, to put it in more modest terms, that section of *Amiga Shopper* dedicated entirely to the ARexx programming language. Whether you've just treated yourself to an Amiga equipped with ARexx (it comes free of charge with Workbench 2.0 and 3.0-based Amigas!) or you're an experienced ARexx hack, this is the place to be.

If you managed to fight your way through the queues at the newsagent's for last month's issue, you may remember that we took a good long look at file handling within ARexx. Most programming languages offer some form of file handling support, but ARexx is particularly well endowed in this department. As you may remember, we covered four new ARexx functions that are specifically designed with file handling in mind – **open(), close(), readln()** and **writeln().** Although they are very powerful even in their basic form, with them you're still restricted to just sequential files.

Most of the time, you'll probably find the humble sequential file more than adequate for your file handling needs, but there are times when sequential files just aren't fast or flexible enough. Take a database program, for example. Although you could theoretically load all your records into memory at once, what happens when the database file outgrows the amount of memory inside your Amiga? It crashes and you lose all your data, that's what!

Speed is also a consideration that you should be aware of. Most computer users are generally very impatient – and who can blame them? After all, time spent waiting for a disk drive is time wasted. If your script takes ten minutes to load a data file into memory, you can guarantee that your users won't be overly impressed. By using a random access file, though, your script will be able to extract any part of a file within seconds regardless of the amount of RAM inside your Amiga and the size of the file. What's more, only the data that you want is read into memory, so you don't need some stupid buffering system to handle all the data that would usually have to be read first if you were to use a sequential file.

ACCESS ALL AREAS

ARexx's implementation of the random access file is considerably more flexible and certainly easier than that in most other languages. Instead of having to mess around with some petty limitation that insists that the format of data held within a random access file must expressly be defined before you can access the file (BASIC's "Field" command, for example), ARexx is totally free and easy concerning how you read information from a random access file. What's more, any file can be randomly accessed regardless of whether it was written as a sequential file, random access file, or any other file type that you care to mention.

The key to this flexibility rests on the power of AmigaDOS. Whenever AmigaDOS opens a file, it automatically assigns a pointer to that file that keeps track of the next character to be read during file access. Each time you read characters from a file, AmigaDOS automatically moves this pointer to the next character to be read, and this pointer is then used to control where the file reading process is to continue from when it commences again. ARexx uses this facility to enable the programmer to manually control the position of this pointer.

The process of shifting the position pointer about is handled by the ARexx **Seek()** function. This potentially very powerful function can be used to manually alter the position of the pointer by passing the function an offset value that specifies where, from one of three positions (more on this later), the pointer is to be positioned. So, for example, if you had a file that contained 100 records of exactly 10 characters in length, all you would have to do to access the eighth record would be to set this position pointer to character 80 (8 records x 10 characters).

Let's take a look at the function and its syntax. This is it (all in one line, of course):

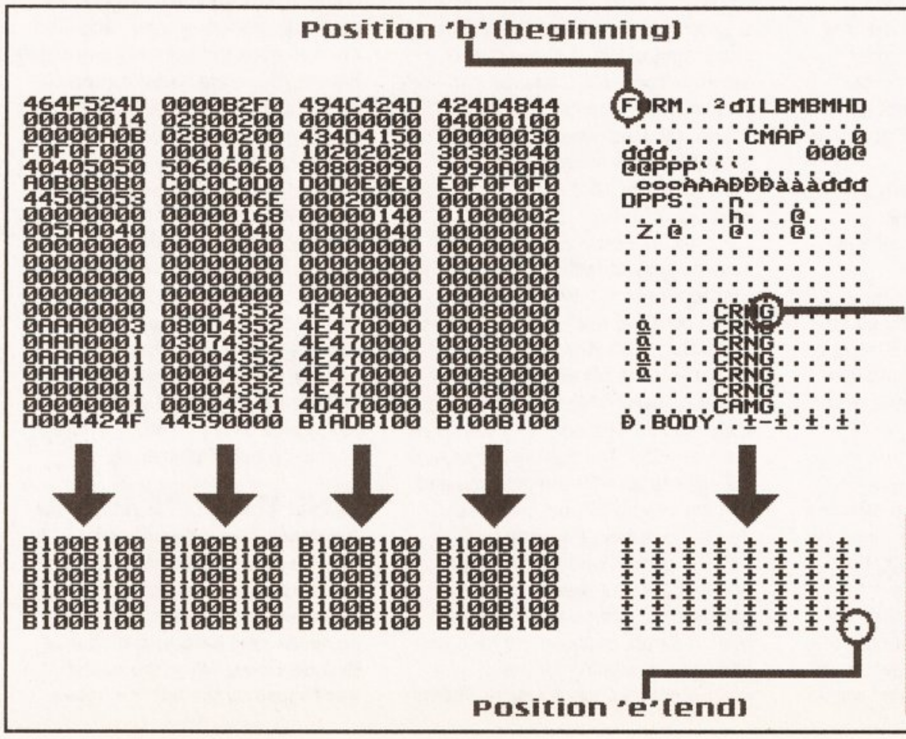
```
newpos = seek(file, offset,
position)
```

Newpos: The **newpos** variable contains a value returned by the **seek()** function that specifies the new position (expressed in bytes) of the pointer relative to the beginning of file.

File: The file parameter is exactly the same as the file pointers that we covered last month. The file pointer is simply a variable that contains the value returned by the **open()** function.

Offset: The offset parameter is the powerful bit that does all the work. Specify a legal offset value (it's no good trying to offset a 10 byte file by a value of 11!), and the **seek()** function will alter the position of the read pointer.

The offset parameter moves the read pointer relative to the position of the seek origin (the start position)



Now *that's* random access: the seek() function gives the ARexx programmer direct control over where data is read from a file.

WRITING AN AREXX DATABASE

Complex applications such as databases – and indeed any programs that need to process complicated files – are more than possible with ARexx once you understand the technicalities of random access files. As we saw earlier, ARexx isn't that fussy about how you read information from a random access file, but this can make the life of a programmer somewhat more complex when you have to manually calculate the exact position of a given record within a file.

As any database programmer will tell you, random access files are only really of use if you know the exact position of any given record at any one time. After all, you'd still need to search the entire file if you didn't know where the record that you wanted was located. To make life a bit easier, database programmers use a number of different techniques to keep track of the records held within a random access file, and these can quite easily be adapted for use with ARexx.

The easiest of all these programming techniques is the simple index, which is basically a sequential file that is read in at runtime and used as a reference to locate records within your main database file. Say, for example, you wrote an address book in ARexx. In order to keep track of all the records within that address book, all you'd have to do is to create an index from one of the address book's fields (usually the surname). The contents of this field from each and every record would be written, in the order that they appear within the file, into a separate index file that would be held in memory as a dimensioned array. Whenever you need to locate a record, all you have to do is search through the index for a given surname and, once it was found, calculate the position of the record within the database file by multiplying the position of the surname within the index by the size of a single record. If, for example, the record you wanted was found at position 12 within the index and you knew that each record was 25 bytes long, a simple calculation is all that is needed to work out the position of the record within the file – in this case, it would be at position 12 x 25 = 300. Good, eh?

and can therefore be moved backwards and forwards. If, for example, you wanted to move the pointer backwards by 10 bytes, you would specify an offset value of –10. If you want to move forward, you should specify a positive offset value.

Position: The position parameter is just a single character that controls what part of the file is treated as the seek "origin" (the start position). Three possibilities are on offer: "b" (the Beginning of the file), "c" (the Current position) or "e" (the End of the file).

THE NEW SEEKERS

That's enough of the theory – let's take a look at a program that demonstrates the power of the **seek()** function. (See Listing 1)

Rather than just being a demonstration that doesn't actually do a lot, the script below provides the bones for a genuinely useful program. If you've ever been handed an IFF file that you couldn't recognise, then a script such as the one below could be written that identified the file and its various parameters. Although our rather limited version only checks the IFF type and then compares it with a rather limited selection of known IFF types, you could add more, if you want, and it does demonstrate beautifully the power of the **seek()** and **readch()** functions.

Right, let's break the code down into some more manageable chunks. Starting at the top of the script, it begins by asking the user the filename of the file to be inspected. Note that the full pathname must be entered too if the IFF file isn't in the current directory. It then attempts to open the file for reading. Just to keep things nice and neat, the script checks to see whether the attempted file access was successful. If it wasn't, then an error message is displayed and the script terminates.

With all the mundane tasks out of the way, the script now starts to process the IFF file. First, it needs to check whether the file is actually IFF at all – after all, it's no good trying to recognise what type of IFF file you've fed to the script if the file isn't IFF in the first place. This is done by reading the first four bytes from the file – every IFF file starts with the word "FORM", so we use this to make sure that the file is in IFF format. If it isn't, then another error message is displayed and the script terminates.

Now for the exciting bit. Once we know that the file is in IFF format, we can check the IFF filetype by reading in the file's "Form". In all IFF files, this four-byte string (four characters) is stored at position 8. All we need to do, therefore, is to adjust the file position pointer to that it points at the first character of this four-byte string using the **seek()** function. Once the position pointer has been adjusted, we then read in four characters which are placed into a variable called "ifftype". This string variable can then be interrogated using the ARexx **"Select.. .When... Otherwise"** construct to work out the file's type.

At the moment, our script recognises just four IFF types – ILBM (pictures), 8SVX (sound samples), SMUS (music scores) and ANIM (animations), but you could quite easily extend it to recognise DR2D (structured drawings), FTXT (formatted text) and indeed any standard IFF file. If you're feeling adventurous and you understand IFF well enough, you can extend the script so that it also displays information about specific IFF types – the dimensions of a picture, the number of colours it uses, and so on. To help you tackle this, watch for a special feature on IFF files in a future issue of *Amiga Shopper*. AS

LISTING 1

```
/*ARexx Seek() Demo*/

say 'Enter filename of IFF file'
pull filename

success = open('filepointer',filename,'r')
if success = 0 then do
   say 'Unable to open file'
   exit
   end
iffchk=readch('filepointer',4)
if iffchk ~= 'FORM' then do
   say 'File is not IFF'
   exit
   end
newpos=seek('filepointer',8,'b')
ifftype=readch('filepointer',4)
say 'IFF Filetype =' ifftype
select
   when ifftype = 'ILBM' then
        say 'This is a picture file'
   when ifftype = '8SVX' then
        say 'This is a sound sample file'
   when ifftype = 'ANIM' then
        say 'This is an animation file'
   when ifftype = 'SMUS' then
        say 'This is a music score'
   otherwise
        say 'Unknown iff type..."
        end
close('filepointer')
exit
```

NEXT MONTH



Over the past nine installments of "ARexx for all", we've covered some pretty heavyweight subjects ranging from string manipulation and file-handling to decision-making and flow control constructs. Up until now, though, the scripts we've been looking at have been restricted to the sort of simple tasks that any programming language could handle. Next month, we'll be taking ARexx beyond the scope of other languages with a look at how ARexx can be used to control other applications. If you're an experienced ARexx user you know the sorts of pleasure in store. If not, you could try drawing some conclusions from the screenshot above. Can you tell what it is yet?

Video star

Power's Video Backup System promises to back up all your hard disk data onto a VHS cassette with the minimum of fuss. Cue the slightly camera-shy Wilf Rees...

Digital watches? No problem. Microwave ovens? Got them sussed. No, the technology that most people find hardest to cope with has to be either the video recorder or the home computer (yes, even the user-friendly Amiga). And here in front of me is a system that combines exactly those two – a system for backing up my hard drive and selected floppies onto a VHS video cassette!

Don't panic. After all, you can handle both your Amiga and your VCR pretty well. But do you need this new *Video Backup System* from Power? You could back up your hard disk onto floppies (and keep it up to date) – and if you can justify the expense, you could buy a tape-streamer, which is essentially the same thing only fancier. And anyway, is the VHS medium reliable enough for accurate storage? One way to find out...

Video Backup System comes in what is to all appearances a VHS cassette holder. Inside you find a disk, a manual, and two leads. One lead is a simple phono-to-phono cable, the other a peculiar hybrid with a serial port connector on one end, splitting into two separate phonos, one red, one black. The manual looks, frankly, pretty cheap. But one shouldn't judge a book etc etc – the contents are extremely well written and explain in simple and coherent language how to use the gear effectively and efficiently.

The software is marvellously friendly and easy-to-use – sensible, logical, and self-explanatory. I thought I would try and cheat, so I asked for a back-up of **df0:** straight off. Immediately I got a requester informing me of a connection failure between my Amiga and VCR. Okay, so now we connect everything up. The serial connector goes into the Amiga, the black phono into the VCR's video output, and the red phono to the composite video input of the monitor, enabling it to act as a control monitor. The phono-to-phono lead goes between the Amiga's composite out and the VCR's video-in. This means data is sent to the VCR, and monitored by your Amiga.

To play safe, I start by backing up a single disk. When backing up, you have a choice of two options: a track-by-track image or a "filesystem" image. The manual says the former is the one for a single floppy, so it's into the top gadget, "Floppy backup". A "Video Log" gadget needs to be set, simultaneously with the tape counter on the VCR. This gadget stores the information such as start time, end time, backup time, name and date. After these are duly set, we're ready to go. Press Record on the VCR, click OK on the requester, and something wonderful is happening – I am watching *Spender* on my monitor! No, stupid fool that I am, I hadn't pressed Record, but Play by mistake.

No harm done – it's forgiving as well as friendly. Try again and yes, it begins to record. After 66 seconds, the task is complete.

Now to see if it worked. Out comes a blank unformatted disk. "Floppy Restore" is the gadget this time; on goes the Play button of the VCR, OK is clicked on the gadget, and 66 seconds later it's over.

Back at Workbench, I open up the window, and it's all there! It works! I run the software from the restored disk. No problems.

Backing up a hard disk requires a "filesystem" image rather than a track-by-track backup, and so does saving the contents of RAM or RAD. What's more, filesystem backup permits the inclusion or exclusion of individual files or directories.

Video Backup System has a neat method for recording a Visual Header onto the VCR cassette just before the actual backup starts. This, together with the LOGFILE function, makes the searching and reinstalling process much quicker. Using an additional "flagging" system, now very common on VCRs, will further greatly assist the search process.

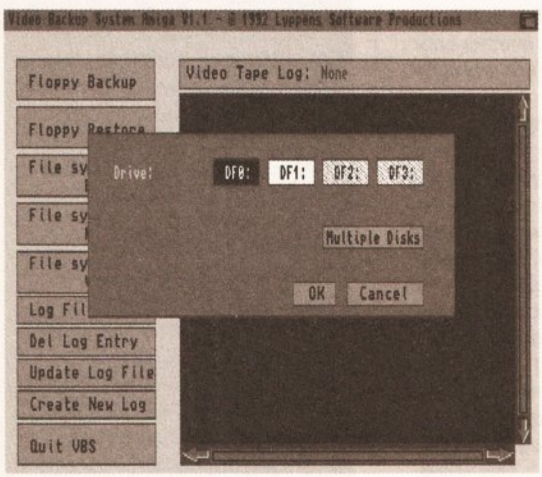
There are extensive options available for hard drive backup from the software, comparable with the best commercial floppy-based backup systems. A major difference, however, is that with the disk system, you need to continually load a new disk each time the current one fills. Not so with a cassette – unless of course you fail to allow sufficient room on the tape to complete the recording. The manual suggests a transfer rate of approximately 40Mb per hour.

OK, so I check all the settings, insert a new E120, press OK on the requester, and we're off. An appropriate time to grab some tea and check the pools results...

After 75 minutes I return, and the operation is complete. Now the painful bit: select **dh0:**, then "Format". Well, it's now clean, and I have to start the process of restoring the data, using "Filesystem Restore". After another hour or so, I exit the *VBS* software, and there it is! I quickly open several directories to check if all is well, and I cannot find any faults. I have a successful backup of dh0: on a VHS cassette.

Two further features offered by this package deserve a mention. First, there is a "Filesystem verify" function. This compares the backup data with the source data, and in the unlikely event of an error, it reports accordingly. Second, a "Send Report" function will generate a report after the backup is finished. This can be saved to any specified destination, and if desired printed out, so you can keep a record of what's on each VCR cassette.

This system works. Will I use it? Yes, but my experience of using tape for all manner of recording leaves reservations which I believe need addressing, though they can be overcome. My first reservation is to do with the VCR itself. Whether you're taping the match of the day or backing up your data, dirty heads mean trouble and clean heads mean accurate reading of information. If you know how to clean the heads on your VCR properly using Isopropyl Alcohol, then do it before a backup, or use a head cleaning tape. Secondly, always use only a new cassette, and a quality brand name, not a 30p special from the Market. And finally, duplicate the process – make a backup backup. Even if you have, say, two inaccurate read errors on each new cassette, the statistical possibility of that occurring in the same place twice is remote. Make two backups to be on the safe side – but in any case, *Video Backup System* will give you a convenient, cheap, accurate and innovative way of securing the valuable data in your hard disk. AS



Packed in what resembles a video-cassette case, *Video Backup System* is an innovative and effective solution to data security. How much do I like it? I'm keeping it!

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Overall rating ●●●●●
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Sailing Through C

Lock up your keyboard, unpack the pen and paper – this month we start work on a killer application with the help of Toby Simpson.

Note: the symbol ↵ in listings means *do not* type a return – the line is simply too long for our narrow columns

This month we're going to start to plan our project in C: The Address Book. May sound boring, but could be quite useful – and after all, you're writing it yourself, so you should be able to customise it as you learn.

First, a preach. Let me tell you what programming is *not*. Programming is not pressing keys. Pressing keys is the slow, tedious bit where you are trying to get your program from your mind into the computer. Programming is about thinking and creativity. This sort of explanation works a whole lot better if we use a fiction writer as an example. Everyone can put pen to paper and make sentences, but not everyone can write books. Try to get out of the habit of thinking "I am programming, so I ought to be typing in code." A major part of programming anything whatsoever is the planning and design. The typing of the instructions comes later.

So, with this in mind we can make a start on our project. First, we'll need a brief. A brief is a short description of the program, summing up what it is to do. Most commercial designers of programs (including games) would start from a brief. Our brief might look like this:

ADDRESS BOOK – BRIEF:

"Design a program to store an unlimited number of names, addresses and phone numbers and allow that information to be easily viewed and accessed from external programs for use. It must run from the Workbench, allow multiple files and optionally use a public screen."

From the brief we would generate a simple specification. For a program of this size, it's pretty petty to get into silly details of what each routine will do at this stage, so let's just extract a simple spec from the above:

ADDRESS BOOK – SPECIFICATIONS:

- Unlimited number of records.
- Storage of phone numbers, names and addresses.
- In-built search to hunt down records.
- ARexx port for access from other applications.
- Easy-to-use video recorder style display for moving around in our file.
- Multiple files.
- Run from the Workbench, on an optional public screen.
- The Workbench icon should allow us to define which file we are to use by default.

This might look a little daunting, but it's a good place to start. Some of the requirements we've given ourselves here are very complex, such as the ARexx port, which would allow other applications to access and process our data.

Why is the ARexx port so important? Essentially, with a good one installed, other applications can access our names and addresses. If our Address Book is coupled with another ARexx application, say the *ProWrite* word processor, we could do a mailshot to all the names in our address book telling them we've moved, getting *ProWrite* to fill out the missing bits in its letter with our database. All done with ARexx! Likewise, you could write a really simple program to give out names and phone numbers in a neat list. The uses of ARexx go on forever, but the moral of the story is that other people can then make your program do what *they* want it to do. And that includes you!

> "Programming is not pressing keys. It is about thinking and creativity."

Let's think a bit about our program. First, the obvious: it's going to have to open a window, and place information in it, and we'll be needing some buttons too. This lot is our user interface, the bit of a program which the user will interact with, and all our program's input and output will be happening in the window.

Underneath the user interface will be our address book itself. This will consist of a load of DOS routines to access our address information off disk. A good and simple way of doing this would be to store all of our records in one single file. We'll need to determine what we're going to put in each of our records as well:

ADDRESS BOOK – RECORD STRUCTURE:

Field name:	Characters:
Name	40 Characters
Address line 1	64 Characters
Address line 2	64 Characters
Address line 3	64 Characters
Address line 4	64 Characters
Post Code	10 Characters
Phone number	20 Characters
E-Mail Address (for CIX addresses and such like)	128 Characters
Comment	128 Characters

You'll notice that I've also listed the number of characters which each field will take. We might change this later on, but with a working figure in mind, we're able to work out how many characters each record will require. The total is 582. We must bear in mind that in reality each of these fields will be one character less than we've defined, because a string has a null character to terminate it. Since one character is one byte, each record will take up 582 bytes. If you have 100 names and addresses, the file will take up about 58K of disk space.

FILES OF FUN

Now we know a little about our records, we can start to plan the way in which it would work. Because we'll want to be able to jump to any record immediately by using its record number, each record will need to be a fixed length. In C, we could calculate the offset from the start of a file using these lines:

```
#define BYTES_IN_RECORD 582

record = 4;
offset = (record * ↵
 BYTES_IN_RECORD);
```

In AmigaDOS, there are a load of really simple functions allowing us to move around within files like this. These routines are in the **"dos.library"**. In C, this is opened for you, so you won't need to open it yourself. But before we use a file, we will have to Open it. Once we have finished with it, it will have to be closed. Assuming we had a file called **"addresses.file"**, we could print the name of any person in it using this little routine:

```
{
BPTR file_channel;
```

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

AmigaDOS – The basic level of the Amiga's operating system, or more strictly Device Operating System. Deals with "devices" – the keyboard, screen display, disk drives, and any peripherals such as printers.

ARexx – Amiga REXX. REXX is an inter-task communications language for IBM mainframes. What this means, in English, is that lots of different programs can all talk with each other in a single language which they all understand, and make use of each other's data and features.

E-Mail – The general term for Electronic Mail systems that enable you to send and receive messages over the telephone lines using your Amiga and a comms program, via a commercial bulletin board and conferencing system such as CIX (Compulink Information eXchange).

Field – See "Records" below.

Gadget – A gadget is the name given to a button, knob, lever, twiddly bit, in fact any graphical part of the Amiga screen display which you interact with in some way to make something happen.

Include files – The Commodore "include" files are files containing function definitions and defined values for all of the operating system's routines. It's almost impossible to program the Amiga without these – and besides, it saves you a *lot* of typing, and the less typing, the less errors!

Public screen – There are two kinds of screen that it is possible for a program to make use of on the Amiga. A custom screen is a screen opened by a program for its own use; a public screen, by contrast, is one that can be used by several programs.

Records – Imagine a filing cabinet drawer full of folders, one for each of a group of persons, each folder containing the criminal record of that person. The filing cabinet is your file, each folder is a record, and each bit of sub-information about that criminal, such as name, address and so forth is a field.

```
int record = 5;
/* Record whose name we'll ↵
 print */
char one_record↵
 [BYTES_IN_RECORD];

if (!(file_channel = Open↵
 ("addresses.file", ↵
 MODE_OLDFILE)))
   {
   printf("Cannot open file ↵
 'addresses.file'\n");
   return;
/* Couldn't open file! */
   }
Seek(file_channel, record * ↵
 BYTES_IN_RECORD, ↵
 OFFSET_BEGINNING);
Read(file_channel, ↵
 &one_record, ↵
 BYTES_IN_RECORD);
Close(file_channel);

printf("Name was %s\n", ↵
 one_record);
}
```

(Don't try typing this in just yet – there is a lot more work to do first.)

None of the above should be new to you, except the new functions we have called – Open, Seek, Read and Close. Also, you'll notice a strange variable type, **file_channel,** which is a BPTR. Don't worry about this, it's just a magic number you have to pass around. When you open a file, the **dos.library** issues you with a file handle. This is a unique number to that file, so that when you want to act on it, you quote your file handle and DOS knows which file you're on about. The same value is used to close the file when you've finished with it.

The other thing which might look a bit odd is the line where I open our file. There is an alarming number of brackets here. This is the sort of thing you're able to do with C. Basically if the entire statement **"file_channel = Open... etc"** evaluates to zero, then the **return** command is executed. **Open** returns zero if it failed to open the file.

You can see from this that accessing our information is going to be reasonably straightforward. Let's try and work out what sort of functions we'll need:

```
read_record_data(record_↵
 number, place_to_store_↵
 read_data)
```

This routine could be used to fetch any given record by simply quoting its number and a place to store the data. The routine would open the file, access the data, and close it again before returning.

```
write_record_data(record_↵
 number, place_to_write_↵
 data_from)
```

This routine would do the exact opposite, storing the supplied record at the named position. We would probably make this routine a little more advanced, and say that if the supplied record number was –1 then we'd add the record to the end of the file – that is, create a new record.

Armed with the above two routines, we'd be able to set up some simple test routines to access our database.

PLAYING WITH GADGETS

We've thought about how our files are going to work, so now we have to consider our user interface. User interfaces are often left till last – not a good thing, seeing that if you mess this bit up, an otherwise really neat program can be totally unusable. In the spirit of good programming, we'll be cutting as many corners as we can by making the maximum use possible of the operating system's functions.

We're also going to be adding some Workbench 2 features into our program, such as the ability to open our address book on a public screen as well as the Workbench screen. We'll also be thinking about how to add an ARexx port to our program – not an easy task, but definitely worth the effort in this case. Towards the end of this series of articles, we'll be using ARexx to produce all sorts of handy results from our program.

Since we have to get our program to work just as well under Workbench 1.3 as Workbench 2.04 we will have to avoid some of the more advanced routines in Workbench 2, but we can still try and make it look nice with a 3D bevel-edged style display, even under 1.3. After all, we're the smart party!

We'll be needing a window. In this window we will display a single record at a time, with some buttons along the bottom to enable us to move around our file. It would be particularly nice if these buttons had little images on them and looked like the controls of a video recorder.

As well as a window, we can help to keep our window layout clean, neat and functional, by putting certain options into a menu. Our menu would enable us to start new files and search our files for certain people, as well as having the totally necessary **About** requester.

WHAT FIRST?

Well, this is pretty much the hardest part of any project: deciding what bit to do first. In our case, since we've thought briefly about the user interface and have a fair idea how that is going to "look and feel", it's a good idea to do the file handling code first. This way, we can put together some easy test routines using **"printf"** and **"scanf"** to allow us to create a file and add some records to it. This way we'll have some test data ready to use when we come to implementing our user interface.

> *"In the spirit of good programming, we'll cut as many corners as we can."*

If you have not already got the Commodore "include" files, then now is the time to get them! We'll be making extensive use of the information in them next month. See the box-out for information on this.

Next month we'll be writing some code, and get a simple set of file handling routines up and working, like the two discussed above. AS

"INCLUDE" FILES

If you want the "include" files together with a huge collection of handy debugging tools, and lots of example code, send a cheque for £25 made payable to "Commodore Business Machines Ltd" and a covering note asking for the latest "Native Developer's Toolkit". The address to send your cheques to is:

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Next month we'll be explaining in a special C programming extra how to set up and use these include files with your choice of compiler.

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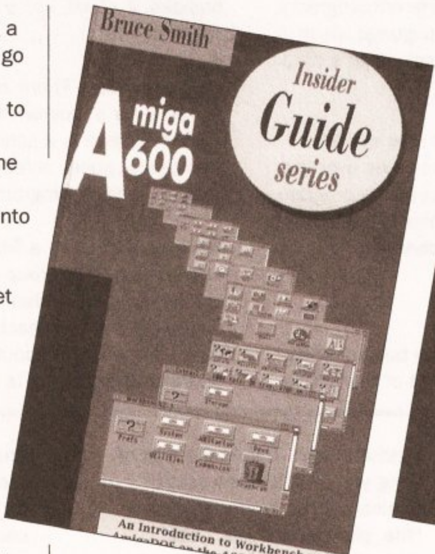
Two recent releases from Bruce Smith Books will be of interest to all those owners of A600s and A1200s who have been left feeling more than a little confused by the manuals that Commodore ships with the machine.

Both these books are designed to be of maximum benefit to the Amiga novice, and their styles and approaches are similar to each other. They both start out by helping readers familiarise themselves with the Workbench and many of the standard operations, such as formatting and copying disks. Later chapters go on to give detailed explanations of how to use a wide range of the Workbench facilities. The subjects covered include: setting the clock; using the calculator; designing and using icons; adding a printer to your system and how to go about installing a printer driver.

The *Insider Guides* then go on to give the beginner a good basic overview of the Shell, explaining the power and flexibility that's at your fingertips once you start to delve into the mysteries of the AmigaDOS command set.

These books don't however set out to provide a comprehensive listing of all AmigaDOS's commands and their parameters. Instead, the author, Bruce Smith, has concentrated on a subset of the most frequently needed commands. Much use is made of practical examples to supplement the concise text.

The feature of the *Insider Guides* that makes them most attractive as basic texts is a series of step-by-step tutorial boxes that are incorporated throughout the books. Screen shots are used whenever they are appropriate, giving you the chance to check that you having been correctly following an instruction.





The new Insider Guides for the A600 and A1200 contain a wealth of practical advice for the beginner

Amiga Shopper Verdict: Both these books make excellent beginner's guides. If you've found the manuals that came with your machine impenetrable, then get a copy of the appropriate *Insider Guide* and you'll be a Workbench wizard in no time.

OCLI GLAREGUARD PROFILE

Price: £86.25
From: GND Distribution Ltd
☎ 071 267 3236

We've been using a couple of OCLI GlareGuard Profile screen filters in the *Amiga Shopper* office for the past month, and frankly we're impressed.

Screen filters are designed to reduce reflections and glare (worst when monitors are sited near windows or in rooms that are unsuitably lit) as well as screen flicker (where characters appear blurred or have "halos" surrounding them). All these things can contribute substantially to fatigue, eyestrain and headaches. These are all symptoms of Computer Vision Syndrome, a medical condition that is receiving more attention as the ubiquity of computers in the home and workplace increases.

The filter that we chose to test, the GlareGuard Profile, is made from toughened optical glass and has a series of optical coatings that are claimed to eliminate 99% of reflected glare. Using glass in preference to plastic has two advantages: glass offers superior optical transmission (that is, you can see through it better) and it has far greater scratch resistance than plastic.

US-based OCLI has for more than 40 years been a specialist in the technology of thin film coatings that lies behind its wide range of glare-reduction products. In fact, OCLI thin films are used as the glare-reduction coatings on the windows of NASA's space shuttle.



GlareGuard eliminates 99% of the glare and 98% of the radiation. (Bet if monitor makers had to achieve the same it'd add 100% to the price...)

Monitors also emit radiation in the form of radio waves (at frequencies in the VLF and ELF bands). A conductive coating on the Profile traps 98% of these emissions and, in conjunction with an earthing strap, virtually eliminates the build-up of static. This also has the benefit of reducing the rate at which dust accumulates on the screen.

Profile filters are made in a variety of sizes, and in versions that will fit either flat or curved screen monitors. We used a curved version on our Philips CM8833-II Amiga monitor. A rubber skirt holds the filter securely over the screen. Velcro fixings are also provided if you want to secure the filter to your monitor more firmly – although the rubber skirt gives such a good fit that these are hardly necessary. The Profile, like the rest of OCLI's range of GlareGuard filters, carries the Seal of Acceptance from the American Optometric Association.

Amiga Shopper Verdict: This is a very high specification screen filter. If reflection, glare or screen flicker have caused you problems in the past, get one of these and you'll banish them forever.

COMPUTERS AND CHAOS – AMIGA ED'N

Price: £14.95
From: Sigma Press
☎ 0625 531035

If you've been following Conrad Bessant's series on chaos in the pages of *Amiga Shopper* (this issue it's on page 101), you'll be interested to learn that Conrad has just brought out a book which takes a more detailed look at this fascinating subject.

Computers and Chaos is a very practical book – it's jammed full of programming examples that are ready to type in. To start off, the reader is introduced to code for generating simple fractal shapes like Sierpiñski's Gasket and the recursive C and Koch curves. Much more powerful listings are given in later chapters for creating, zooming in and out of, and saving images of the Mandelbrot and Julia sets. Conrad has chosen to use both Amiga and GFA BASICs for the program

continued on page 89

THE AMIGA SHOPPER READER SURVEY

TELL US WHAT YOU WANT... AND WHAT YOU DON'T

We want to improve *Amiga Shopper* and to do so we need your opinions, so please help us decide what goes in future issues. If you can spare five minutes, just fill in this simple questionnaire, cut out the page and fold it up according to the instructions overleaf, then just put it in the post with a stamp on the front. Thanks for your time.

When filling in this questionnaire:
'❑' indicates you should tick only one box;
'O' indicates you may tick any number of replies

0 How did you first hear of *Amiga Shopper*?
a❑ Advertisement in *Amiga Format*
b❑ Advertisement in Amiga's box
c❑ Recommended by a friend
d❑ Picked up a copy 'on spec'

1 How did you buy this issue of *Amiga Shopper*?
a❑ Delivered by newsagent
b❑ Reserved by newsagent
c❑ Planned visit to newsagent
d❑ Subscription
e❑ Just saw it in the shop

2 Approximately how many issues of *Amiga Shopper* have you read?

....

3 How many other people read your copy of *Amiga Shopper*?

....

Overall, how do you rate (out of 10) *Amiga Shopper* compared to other Amiga mgazines which you read regularly?

4 *Amiga Shopper*	................/10
5 *Amiga Format*	................/10
6 *Amiga Computing*	................/10
7 *Amiga User International*	................/10
8 *Amiga World*	................/10
9 *CU Amiga*	................/10
10 *Amiga Power*	................/10

For each of these sections in the magazine, would you like to see less, more or the same space devoted to it in future? (Bear in mind you can't have more of everything!)

	Less	Same	More
11 News	a❑	b❑	c❑
12 Letters	a❑	b❑	c❑
13 Amiga Answers	a❑	b❑	c❑
14 Video and Graphics	a❑	b❑	c❑
15 Education	a❑	b❑	c❑
16 Communications	a❑	b❑	c❑
17 AmigaDOS	a❑	b❑	c❑
18 DTP	a❑	b❑	c❑
19 AMOS	a❑	b❑	c❑
20 PD & shareware	a❑	b❑	c❑
21 Competitions	a❑	b❑	c❑
22 C Programming	a❑	b❑	c❑
23 ARexx	a❑	b❑	c❑

Which of these would you like to see in the magazine? (Never, sometimes, frequently or every month)

	Never	Som	Freq	EvMo
24 Single product reviews	a❑	b❑	c❑	d❑
25 Comparative product reviews	a❑	b❑	c❑	d❑
26 Graphics tutorials	a❑	b❑	c❑	d❑
27 Music tutorials	a❑	b❑	c❑	d❑
28 DTP tutorials	a❑	b❑	c❑	d❑
29 Beginners programming tutorials	a❑	b❑	c❑	d❑
30 Advanced programming tutorials	a❑	b❑	c❑	d❑
31 Tutorials based on particular programs	a❑	b❑	c❑	d❑
32 General interest features	a❑	b❑	c❑	d❑
33 Show reports	a❑	b❑	c❑	d❑
34 Foreign news reports	a❑	b❑	c❑	d❑
35 Comms coverage	a❑	b❑	c❑	d❑
36 Book reviews	a❑	b❑	c❑	d❑
37 CDTV & its software	a❑	b❑	c❑	d❑
38 New PC/Mac software for Amiga emulators	a❑	b❑	c❑	d❑
39 Cover-mount booklets	a❑	b❑	c❑	d❑
40 Colour editorial pages	a❑	b❑	c❑	d❑
41 DIY hardware projects	a❑	b❑	c❑	d❑
42 Program listings	a❑	b❑	c❑	d❑

43 How do you rate (out of 10) the usefulenss of the cover disk?

................/10

44 Which of the following are reasons why you buy *Amiga Shopper*? (You may tick more than one)
aO For the hardware reviews
bO For the software reviews
cO To find the best prices from advertisements
dO To learn about my computer and how to use it
eO For an interesting read
fO It's cheap
gO To buy through mail order advertisements
hO It's the only one with no games
iO For the cover disk

45 What model of Amiga do you own?

aO A500	fO A1500
bO A500 Plus	gO A2000
cO A600	hO A3000
dO A1000	iO A4000
eO A1200	jO None

Do you own or intend to buy in the next six months any of the following hardware?

	Own (46)	Intend to buy (47)
Monitor	aO	aO
Printer	bO	bO
Sound sampler	cO	cO
Video digitiser	dO	dO
Genlock	eO	eO
Hard disk	fO	fO
Graphics enhancer	gO	gO
Emulator	hO	hO
Floppy disk drive	iO	iO
Modem	jO	jO
Accelerator	kO	kO
Extra RAM	lO	lO
CD-ROM drive	mO	mO

Do you own or intend to buy in the next six months any of the following software?

	Own (48)	Intend to buy (49)
Word processor	aO	aO
Spreadsheet	bO	bO
Database	cO	cO
Painting program	dO	dO
Drawing program	eO	eO
DTP	fO	fO
Comms program	gO	gO
Sampler/sequencer	hO	hO
Progging language	iO	iO

50 Roughly how much do you expect to spend on hardware in the next six months?
a❑ Nothing
b❑ £1–£99
c❑ £100–£199
e❑ £200–£500
f❑ More than £500

51 Roughly how much do you expect to spend on software in the next six months?
a❑ Nothing
b❑ £1–£99
c❑ £100–£199
d❑ £200–£500
e❑ More than £500

52 What is your age?

....

53 What is your approximate annual income?
a❑ Student grant/at school
b❑ Other under £4,000
c❑ £4,001-£7,000
d❑ £7,001-£10,000
e❑ £10,001-£15,000
f❑ £15,001-£20,000
g❑ £20,001-£30,000
h❑ Over £30,000

54 Does your job largely involve working with computers?
1❑ Yes 0❑ No

The details given in this questionnaire will remain confidential, but if you wish to be informed of special offers and subscription opportunities, please fill in your name and address below.

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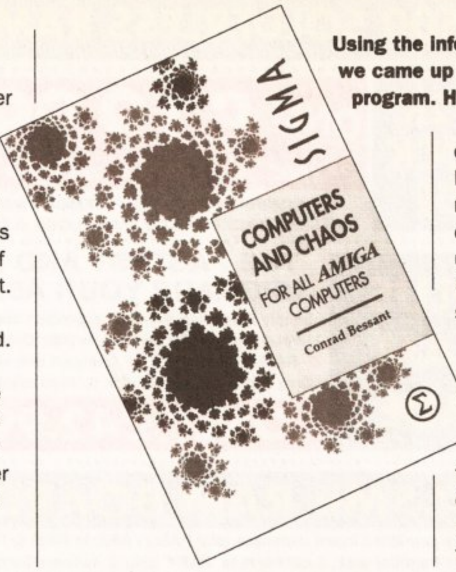
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continued from page 86

segments and has devoted a chapter to advice on how to convert the listings to other BASIC dialects.

This isn't a book that's suited to the absolute beginner because it assumes that the reader already has some understanding of the theory of chaos and what a fractal is all about. If you've read our chaos series though you'll already be up to speed.

Now to the bit where lots of people just seem to switch off – the maths. When Stephen Hawking was writing his bestseller *A Brief History of Time*, he was told by his publisher that the sales of the book would be halved for every equation that he included. Being an astute sort of chap he included only the one, $E = mc^2$, and the book has sold millions – albeit with many readers confessing that they didn't understand it. With *Computers and Chaos*, Conrad hasn't taken the same approach, and it's fair to say that his book will appeal primarily to the more technically minded – those who don't mind dabbling in the realms of complex numbers. These readers will find themselves rewarded with a concise explanation of this and other related topics that's better than those to be found in many standard maths text books.



Using the information in Conrad Bessant's book, we came up with a fractal caption generating program. Here's the resulyvc ujhrnfauh ljhro kc

Readers who want to save their fingers from lots of typing will be glad to hear that a disk containing all the source code from the book is available for a further £6.50.

Amiga Shopper Verdict: *Computers and Chaos* is ideal for anyone who wants a good introduction to producing fractal generating programs for the Amiga. Remember, if you want to get more out this book than just the listings, you'll have to spend some time coming to terms with the maths. Readers prepared to invest this time will find that this book quickly teaches them the skills needed to produce their own fractal generating programs.

DOS LAB

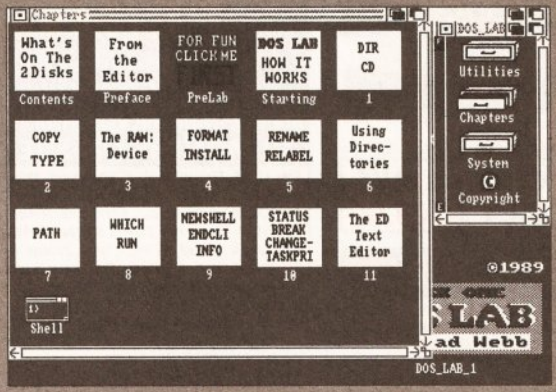
Price: £19.99
From: George Thompson Services
☎ 0707 391389

DOS LAB is a disk-based AmigaDOS tutorial that has just been released by George Thompson Services. Firmly targetted at the beginner, *DOS LAB* aims to demystify the somewhat cryptic commands that go to make up AmigaDOS.

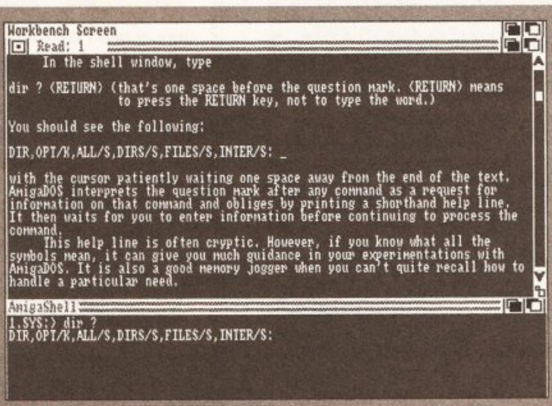
DOS LAB is supplied as a three disk set that runs with Workbench 1.3 and above.

Loading and starting the *DOS LAB* package really couldn't be a simpler operation. All you have to do is double-click on the disk icon that initially appears and then double-click on the specific chapter of the tutorial that you wish to study.

A particularly attractive feature of the *DOS LAB* package is that while you're perusing a chapter on-screen, you can use a Shell window to test out the commands that you're being introduced to. *DOS LAB* is not in itself interactive – in reality the package actually consists of little more than a set of text files with a reader, and it doesn't give the user any feedback – but that doesn't reduce the value of its "hands-on" approach. Many beginners will find that being able to try out commands while at the same time being able to follow through a written explanation of the command will help plant its function and parameters much more firmly in the mind.



DOS LAB's user interface is extremely straightforward – all you need to do is point at the icon for the bit you want and double-click



***DOS LAB* is designed so that the reader can study the text explaining a command while experimenting with the command in a Shell window**

The *DOS LAB* package is certainly a comprehensive introduction to the operating system – the reader will find that all of the commands are examined in some detail, with all of the important parameters also listed and explained. All of the text has been lucidly written and it proves to be very easily followed – if you find that you have trouble in getting your head round what the *DOS LAB* tutorial is going on about, then you haven't really got the aptitude to be playing about with the AmigaDOS command set in the first place.

DOS LAB is self-booting (the set includes boot disks for version 1.3 and 2.0 of the operating system) and a Shell icon is provided so the beginner doesn't even have to work out where the Workbench hides its own Shell icon.

Amiga Shopper Verdict: If you're new to AmigaDOS and want to get hold of a clear, easy-to-understand and practical guide to the inner mysteries of the operating system, then *DOS LAB* is just the package you need. Spend just a few hours studying the tutorials and trying out the commands and you'll soon have a good grasp of what goes to make AmigaDOS tick.

FLIGHTPATHS

Price: £49.95
From: Meridian Software
☎ 0533 863501

If you're a user of *DPaint IV* and interested in creating animated title sequences, then you'll want to know all about *Flightpaths*. Just released by Meridian Software, *Flightpaths* is a multi-stage move sequencer that's the ideal package for putting some zing into your titles.

It's remarkably straightforward to use, despite the instructions being a little terse. What is assumed is that the user is familiar with *DPaint IV* and specifically the **move** requester – although if you're not it doesn't take long to master.

The sequences of **moves** are supplied in two libraries that are called "ins" and "outs". As the names suggest, "ins" are **moves** you use for flying title captions in and, unsurprisingly enough, the **moves** in the "outs" directory do just the reverse. The possible effects have titles including Bounce, Chute, Copter, Drill, Drop, Knievel, Leaf, Mortar, Ripple, Slalom, Slinky and Tumble. Several **move** sequences have been provided for each of the different effects – the Drop effect for example is supplied with three **move** sequences. This gives you the chance to pick between three similar animations, all of which make the title look as though it's dropping into place under the influence of gravity. The "leaf" sequence makes the letters from the title flutter down like autumn leaves caught in a gentle breeze. Another sequence is named "Knievel" – after that daredevil stuntman fellow. Here the text starts out in the distance (the software adjusts the perspective as required), comes in, jumps a ramp, becomes airborne, crash-lands and ends up in place. Wow.

Right, well, that's some of the moves explained – but it doesn't really help that much, does it? Meridian Software is very aware that many people simply can't conceive how versatile and comprehensive its **move** sequencer is, so it has produced a demonstration video. Priced at £12.50 (plus £1.50 post and packing), the video demonstrates the power and flexibility of the package – so you don't have to shell out £50-odd to check that *Flightpaths* is the software that you're after. The cost of the video is fully deductible from the price of *Flightpaths* if you do decide to purchase the software.

Amiga Shopper Verdict: If you want to add some impressive special effects to your titles, then make sure that you take a look at the *Flightpaths* move sequencer. The wide range of effects supplied should easily take care of your needs. AS

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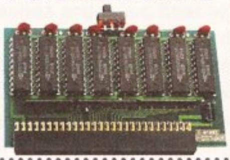
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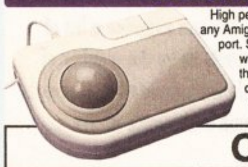


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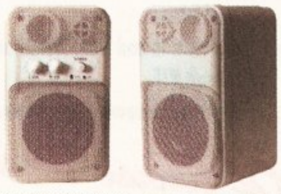
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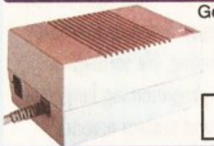


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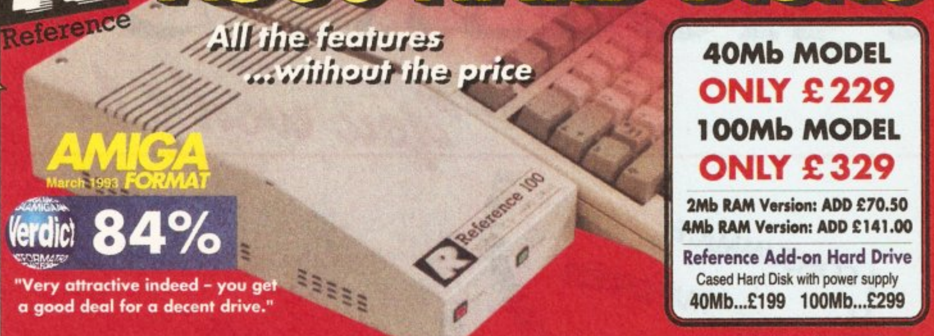
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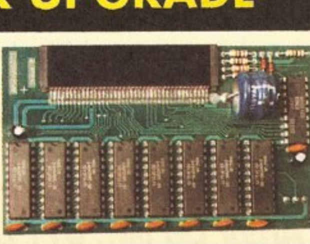
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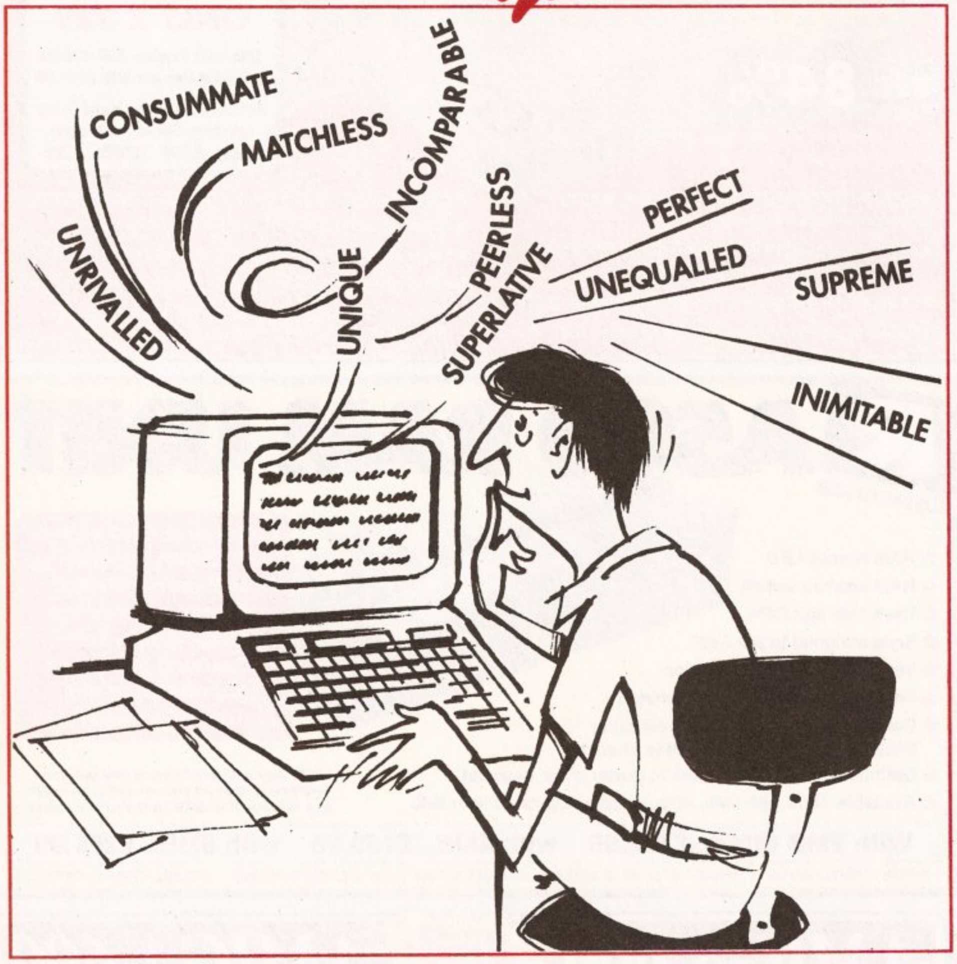
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Down to business

Mark Smiddy examines a database which, in spite of its shy approach, has a lot to offer.

InterBase is not new – version 1.2, covered here, carries a 1991 copyright. So where has it been hiding since then? The answer is Denmark – it's the leading database there, apparently. Why has it suddenly appeared now? I can only assume that some UK distributor has picked it up since the demise of *Superbase Personal.*

This budget-priced Scandinavian package comes in a thin cardboard box with two disks and an almost microscopic, 70-odd-page manual. The plastic ring-bound A5 tome is cheaply produced with super-tiny fonts (myopic readers, beware!) and a dearth of graphics. This suggests that *InterBase* has been swiftly converted for the English-speaking market. The fact that my copy came with two program disks and no examples supports this supposition. But appearances, it seems, can be deceptive and I soon found myself embracing a package which could perceivably find a niche in the sub-£50 bracket.

FIRST PRINCIPLES

Like *Order* and unlike *Superbase, InterBase* works on a project-by-project environment where a set of database files makes up the complete application. This makes it a little confusing for a flat-file user, but is clearer in the overall scheme of things as far as relational databases are concerned. Whether this clarity makes things easier for the end-user or the programmer is not as well defined though – a lot depends on the front-end implementation. *InterBase* has achieved a happy medium because it is possible to open other files (referred to as "tables") inside the current environment. There is much talk of tables in *InterBase* – *InterBase's* name for database files. Interestingly, the classic definition of a relational database is one in which the user sees the data as organised as a collection of tables. (Personally, I could never get my grey-matter around that analogy either.)

Getting started with *InterBase* is easy (no installation is required, and hard disk installation software is supplied), and it works on any Amiga with at least 512K memory. As I write this in *TransWrite, InterBase* is quietly running in the background under Workbench 3.0 with a 60830 engine – proof again that good software runs on any configuration. Nevertheless, by catering for the smaller machines with low memory availability, *InterBase* opens on a four-colour (standard or interlaced) screen and most of the graphics are only rendered in two: blue and white. This is horribly reminiscent of GEM (the Atari ST/PC front-end) with Amiga Workbench colours, and just as nasty to use. However, judicious use of the palette option can improve matters somewhat.

Common functions such as cut, copy, paste, new record, and so on are accessed from an icon bar, but the icons are rather small and poorly drawn, rendering the idea less than convenient – especially in interlaced mode. Moreover, the "delete record" function is awfully final and a misplaced mouse press could soon result in one or more missing records. This would not be a problem if *InterBase* warned you of the deletion – but it doesn't! Not a mistake you're likely to make twice...

GREEN FIELDS

InterBase supports four basic field types: text, numbers, dates, and an interesting extension to text fields. "DStrings", as they are called, are dynamic text fields which can be any length up to 9,999 characters. This overrides the classic problem of fixed width fields, although they do take up extra room in the database file and require more processing time. The size seems a little odd – some multiple of 2 would have seemed more logical, but there you are. (In comparison, *Superbase Personal* did not have this facility at all, and *Personal 2* handles such things as external text files – a more powerful system, but more difficult to use.)

Numeric fields are 64-bit signed integers using IEEE double-precision, giving a range 10e-308...10e308. Put this in perspective and consider

BEGINNERS START HERE — BUYING A DATABASE

Q: What should I look for in a database?

A: To answer this question you must ask yourself what sort of information you want to store. If your needs are simple – names, addresses and telephone numbers, for instance – then a word processor is probably sufficient. No, I haven't gone completely daft: many word processors are quite powerful enough to maintain a simple list such as this. Most word processors cannot sort a list of records (paragraphs), but this is rarely necessary in practice and an elementary search facility will usually suffice. In any case, some WPs do have sort functions.

Some spreadsheets also have primitive data handling facilities, so you may find an existing application can be pressed into useful service without the extra outlay. More complex applications or ones with many hundreds or even thousands of records are going to be better served by a tailor-made application. So the next thing to ask is: how much data are you going to store?

Q: What difference does that make?

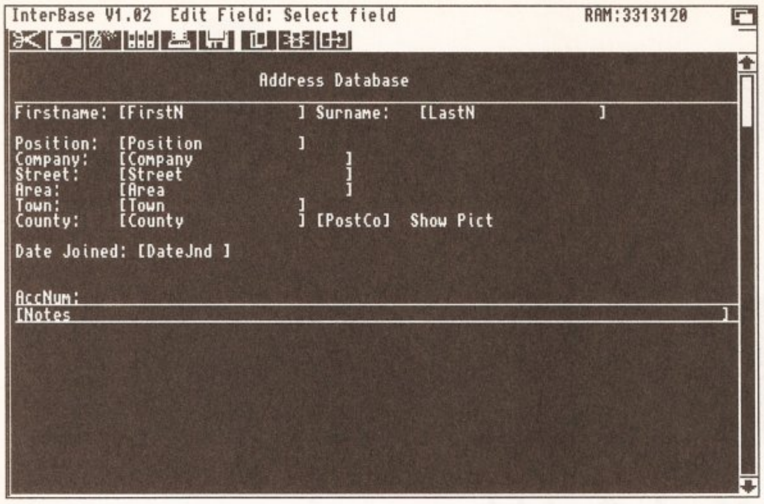
A: Databases come in two flavours: disk-based and memory-based. Memory-based applications tend to be the simpler flat-file type and can be very fast at what they do. The number of records you can store, however, is limited by the amount of memory installed in your machine. Memory expansion is not cheap, and it is limited by the machine – typically 9Mb is the limit on the smaller machines. In fact, it is often more cost-effective to buy a disk-based database than expand the memory. With a disk-based application the number of records is usually only limited to the available space on mass-storage. Surprisingly, even though one floppy disk can store an awful lot of records in less than 1Mb, you may need 4Mb of RAM before you could load all those records into memory. With a disk-based application the major constraint is on the maximum file size, or, with unique indexes, the size of the record index marker: two bytes equals 65,535 records, four bytes over 4 billion!

Q: What else should I look for?

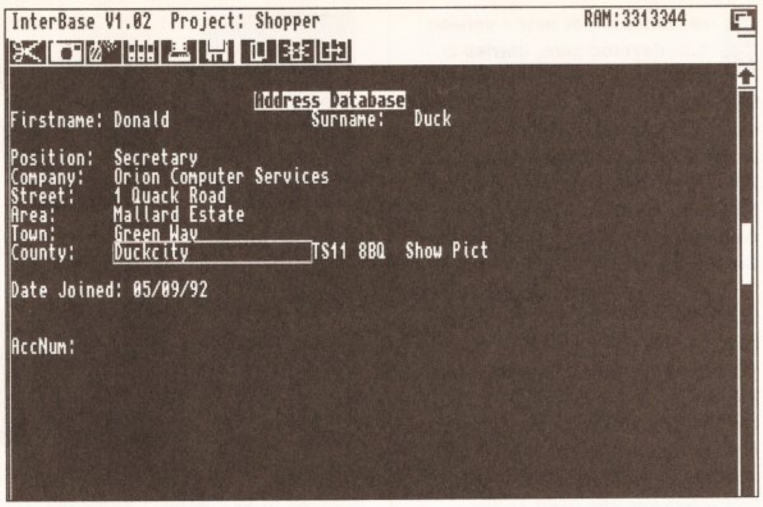
A: The available field types are essential. Any database worthy of the name should be able to store text and numbers. Numbers are ones to watch out for too: make sure it can handle "floating-point" numbers and not just integers. Arithmetic functions are not essential unless your application involves handling money, statistical or scientific data. If the application is big and complex, check that the layout editor is capable of handling enough information: can the screen be paged? Are the reporting facilities powerful enough to suit your needs? Is the date format acceptable (in the US, for instance, the month number is listed first)? Finally, if more than one person is going to have access to the software, check whether the database has optional password access. Password "access levels" offer extra security, but are not essential.

Q: Do I need a relational database?

Relational features are not essential – but I'll say it again: they are useful to have. Besides, a relational database can do everything a flat-file can do and a lot more. Therefore, if a relational database has the other features you need, don't be put off – you may find a use for the relational facilities later on!



Creating a user-defined report. *InterBase* supports four field types, including a handy dynamic text field which can be any length up to 9,999 characters



Once you've defined your report, it's easy to edit a record. Standard functions such as cut, copy and paste are accessible via the icons above the work area

that the number of atoms in the universe has been estimated at less than 10e99 and it sounds like overkill – this is a database, after all. Dates are similarly daft: values are claimed to span 5000 millennia from 1AD. This suggests that someone just thought about adding 365 days per year and forgot about calendar changes: there haven't always been 12 months in the year!

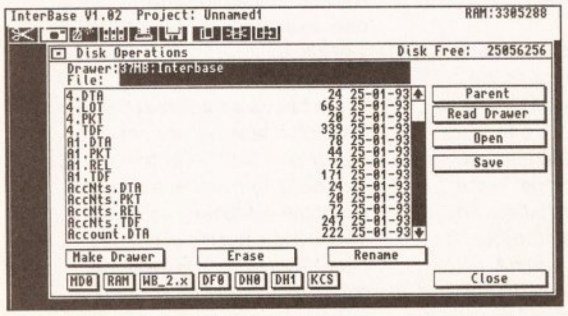
Four optional field flags determine whether a field is edit- and update-protected, required or unique. The latter two suggest that the user is protected from the hassle of defining indexes. As in *Superbase* and so many others, though, there is no option to change the order of the fields in the file definition, either during the creation or edit phases. Technically speaking, inserting a new field where records exist is quite tricky, but it is possible and would be handy to have. An office manager asked me recently, "What happens when the boss decides he wants to record more information?" This is possible with a relational database – you create another linked file for the extra data – but I must concede the guy had a valid point.

BRUSH STROKES

InterBase only features a single default layout where the fields are listed vertically by name – which would have been better if at least one line had been left between records. More practical layouts have been created using its screen painting feature, but while this is usable it is a tad unfriendly. The initial layout appears, allowing any field to be moved or deleted. The move operation is more difficult than it should be – it has to be selected for every screen object, whether it be text annotation or a field.

Moreover, the items cannot be dragged as you might drag an icon on the Workbench; instead you must click on the object and then click at the destination position. A more acceptable approach is to use a "ghost" outline which tracks the mouse image so you can at least *see* where the object is going to end up. This is more use than just being a visual aid – it helps you to ensure that part of a field annotation is not going to overlap the field it relates to. What makes this more of a nuisance is that *InterBase* can (optionally) position a field at any pixel position. To be fair, this system is actually quite simple to use, although I feel beginners would find it a little tricky at first.

The box-blurb claims that *InterBase* is capable of handling graphics, so you might think this should have been defined in the field type. In fact, the graphics are neatly handled in the layout definition. You specify the field to use, the path where the graphics are stored and some text to display. A path could be anything from the current directory to a logical assignment or even a different disk. It makes no difference to the software because it constructs a complete filename from the Path and contents of the text field defined and asks the Amiga to locate it. Pictures are not shown until you click in the text area defined in the layout "Display now", for instance. *InterBase* is capable of displaying any IFF picture, including HAM and interlaced, although if you try the latter you get a warning about non-standard display type. It is not possible to step through the records and display more files, which seems a shame.



The disk operations requester blends a file requester and a lot of other functions – too many for my money

SORTING, SEARCHING, AND SO ON

Searching for data is something you will need to do frequently – that, after all, is what databases are all about. There's both good and bad news here. On the good side, *InterBase* is capable of searching any field for text or an expression. Text search filters can include a comprehensive set of powerful wildcards – not unlike the ones found in AmigaDOS: **?** means any character; **X*** zero or more repetitions of the character; **XX*** one or more repetitions of the character. This is supplemented by an escape code so you can search for the wildcard itself. Similarly, it is also possible to search on a simple expression – text or numeric. Once a filter has been defined and records displayed, you can narrow down the search still further by entering another set of filter parameters.

OK so far – so what's the bad news? It doesn't work as you might expect. Once a filter has been defined it stays active until cancelled: and there's no way of telling if a filter is active or not! Even clearing the filter in the requester does not put things back to normal. With mud-like clarity, the documentation is little help, but a frantic call to Denmark soon put this red-faced reviewer back on the right tracks. Helpful as ever, Interactivision pointed out "Reset Selection" on the "Table" menu fixes things. To be fair to them, it is in the manual – a vague mention, but it's there. But why is this function on a different menu nowhere near to the items it pertains to?

Fortunately the "sort" function does work as you'd expect – so you can at least organise the data into some kind of order. *InterBase* features a powerful sort function which has one primary and three secondary keys, any of which can be ascending or descending. This also suggests the lack of indexes – a primary use of indexes is to keep data in some kind of order regardless of how it is entered. For instance, if the data is indexed on ascending surname, the name Smiddy appears in the database after Smart and before Smith. In the database this means the record's visible position in the table – not necessarily its physical position in the file. (Sorting may still be found in reports to order fields which are not normally indexed. It is not normally viable to maintain more than a couple of indexes – they take up disk space and processing time because they are always kept sorted every time a new key is added.)

The major problem with the approach taken by *InterBase*, although it is easier to program, is

JARGON BUSTING

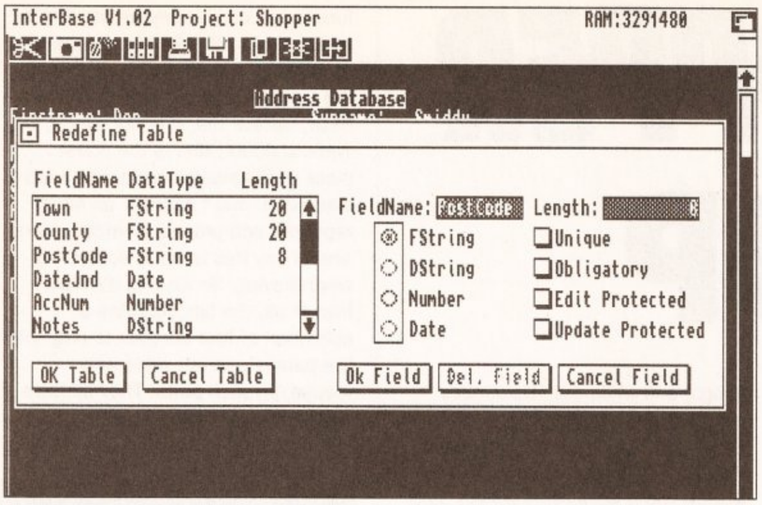
Field: A container used to hold a specific type of information. The most basic field types are text (any characters) and numeric (numbers only), but even these can be extended in an almost infinite variety of ways.

Index: A collection of field keys and associated record numbers.

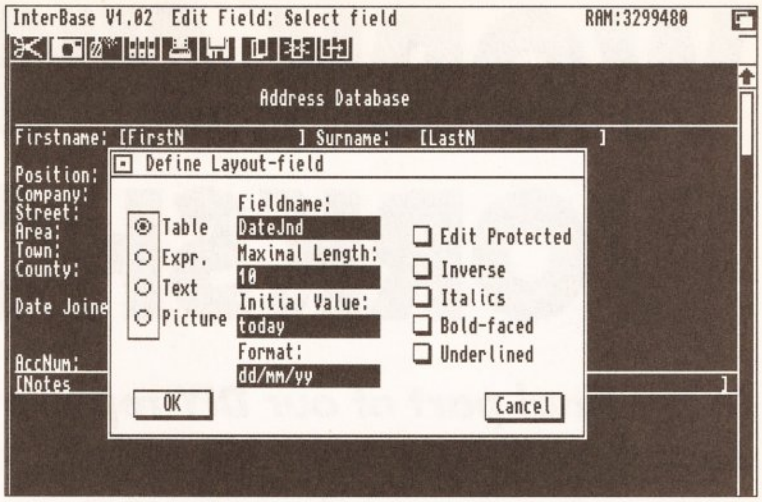
Key: A number generated by the contents of a field.

Record: A collection of fields.

Report: A method of displaying data both on the screen and on the printer.



The main field requester may be ugly to look at – but it is easy to use. All the information you need is right there in front of you and easily modified



The field requester in the report generator, by contrast, is confusing until you get used to it. For the most part, the features are there... just hard to get at

that the sort must be completed externally. This means the records have to be physically moved around inside a disk file, and that takes a considerable amount of time. To be fair, *InterBase* makes use of available RAM by optionally copying a data file to RAM when it is opened, so this makes sort operations much faster. But sorting externally on a floppy or even hard disk on a large file will take a long time – beware.

Updating any file is a real problem if you have a lot of similar operations to complete. For instance, let's say instead of entering a Town as Middlesbrough, you entered it as Middlesborough (a simple mistake and the historical reason the town's name is spelt that way). Updating is a process whereby every record in the file is changed – in this case the Town field. Updates work easily and (thankfully) only affect the records selected by the current text filter.

FRIENDLY RELATIONS

Relationships, although central to *InterBase,* are a bit of a moot point. Even Interactivision admits the documentation is weak in this area – a shame, since it is also the most complex part of the system. Try as I might I failed to get the system to relate two files together on a single form, although Interactivision claims this is possible. This weakness, I suspect, lies solely with the documentation, and I'll let you know when I get the problem solved.

Where *InterBase* does come into its own is in relating two tables together to create a third. Four operations are possible here: Union – merge two tables, creating a third; Intersection – make a new table containing all records common to two source tables; Join – make a new table by concatenating two source tables; and Difference – make a new table by selecting the records not common to the two source tables.

These may sound a little esoteric, and in some ways they are. But the end result is quite easy to use since you have a new file which can be manipulated without affecting the original data. Such files can be tailored using the layout generator and used for reporting purposes.

UNWANTED LOCKS

Unusually for an Amiga application, *InterBase* is designed to be used in a multi-user environment. This means in practice that several people may have non-exclusive access to the data on different networked terminals at the same time. To accomplish this the authors have employed a crude form of locking. In effect, once you have access to a table you have exclusive write access to it. At the end of a session quitting back to Workbench relinquishes your exclusive access – however, the occasional guru puts things in a spin.

Since a software failure does not close the files properly, the locks remain in place and they have to be removed before the system can be used again. *InterBase* provides the tools to do this in the main program, but the error message can be confusing and frightening at first! Besides which, in a true multi-user system it should be up to the network server to handle exclusive and non-exclusive file access at this level, not the individual software.

UP 'N' RUNNING DOWN

Usually one of the best tests of any serious application is how quickly you can get started without having to refer back to the manual. *InterBase* fails this test quite miserably – but a lot of that has to do with its age. When *InterBase* was designed, Workbench 2 was still in development and user-friendly windowed environments were still in their infancy. *InterBase* is a stab in the right direction, but the requesters and menus are frighteningly complex at first glance – typical of such applications. However, two things must be remembered: *InterBase* is designed as part of a suite sharing a common interface, and its price places it in the budget category.

A good re-think of the front-end around the Workbench 2 design and styling would not go amiss. Intuition-based relational databases are likely to be compared to *Superbase* – and the now discontinued *Superbase Personal* is the closest on price and performance. *InterBase* works reasonably well given the constraints of the 1.3 Kickstart front-end, but, I can't help noting, *Superbase* did it better. With a better manual (an index would help) and some bug fixes, you could do a lot worse for the money. In spite of the bad documentation, *Order 2* (the other contender in this price bracket – see *Amiga Shopper* 23) is still available, but it can't hold a greasy stick to *InterBase.* AS

OPINION: RELATIONAL DATABASES

A colleague of mine commented recently that he would not consider offering a relational database because people tend to shy away from them. The grandaddy of them all, however, *Superbase Personal Amiga,* sold in thousands – despite being a bit of a chew to use in true relational applications.

So let's set the record straight: a relational database is not more difficult to use than a flat file. The confusion arises from the fact that most relational databases tend to be more powerful than their flat-file counterparts. This power has a nasty habit of percolating through to the interface level, and therefore, the poor end users find themselves confused by a cacophony of menu options and complex requesters.

This is partly true of *Superbase Personal* and highly evident in *InterBase,* but once mastered, these applications are no less easy to use than the most basic of all flat-files. The cure for these problems would be for someone to sit down, diagnose *what* is confusing and simplify things. Your starter for ten is the jargon: fields, record, files and so on. Maybe some major developer, some day, will realise this and chuck the whole lot in the bin.

SHOPPING LIST

InterBase £29.95
By: Interactivision, Hovedgaardsvej 4, DK-8600 Silkeborg, Denmark
☎ 010-458-680 2700

Review copy loaned by:
CHIPS Leisure,
Middlesbrough,
Cleveland.
☎ 0642 219139

CHECKOUT INTERBASE

Ease of Use ●●○○○
Could be better in some aspects. Odd bugs make the going tough.

Power ●●●○○
Looks good on the surface – but may slow down on large files.

Documentation ●●○○○
Dreadful. Crucial information on relations is badly written.

Value ●●●●○
For this sort of cash, you won't find anything close.

Overall rating ●●●●○
In spite of its many failings, I enjoyed using it – enough said!

WORK *SHOPPER* WORKSHOP

In the final part of our DIY repairs series, Wilf Rees casts his eye over some diagnostic software and offers some technical specifications to help you sort out those nasty little gremlins.

So far in this series, we have have looked at most of the typical tests you might reasonably attempt yourself, and the procedures you can tackle in order to effect a repair. There is, however, another way of identifying the source of a problem: diagnosing a fault within the computer's systems is a function readily carried out by software, because it is able to execute specific system tests without causing electrical failure.

What it cannot do, of course, is trace a fault if it exists at any stage prior to disk access, so, along with the information on software diagnosis, I have put together a chart which represents a combination of the options you can take to try and find a fault yourself, as well as some indication of which specific components are responsible for which specific functions in your machine. (This is not meant as a definitive guide, of course – for more details, follow *Amiga Shopper's* new series about how your Amiga works, starting this issue on page 20.)

THREE OPTIONS

I want to mention three diagnostic systems which might help in tracing a fault. The first is a memory checking disk, supplied to anyone who purchases a Microbotics memory expansion. I must point out that this disk is copyright, and not available for purchase independently. Copying it is illegal. It will thoroughly trace all additional memory in your Amiga, and while the Microbotics people say it is only intended for their cards and they can't guarantee its success on other boards, I can assure you it works with others, and it does not contravene or infringe the law if you simply borrow the disk to check out your memory.

Next is Commodore's offering. Commodore produced a system test disk in 1989 which carries out several tests to ascertain the current state of several functions in your Amiga. I would not describe it as particularly comprehensive, nor specific in identifying single problems, but it does give a general "MOT" on the various systems in your machine, and it is a useful addition to your disk library. This disk was supplied to dealers, to help them check machines prior to sale, and if you have a good rapport with your local computer retailer, you should be able to borrow it to check your system. Failing that, it is still available from Commodore (☎ 0628 770088) for £14.99.

The third option is something called the *Advanced Amiga Analyser* from an American company called Grapevine, which advertises in *Amiga Shopper.* (If you're feeling flush with funds, you can telephone the firm on ☎ 0101 914 357 2424.) This piece of diagnostic software comes with the usual American hype, but in this case, believe me, it is not wrong. Without doubt, this is the finest piece of diagnostic equipment I have ever seen, and I address *all* Amiga repairers and practical-minded users when I say this is really something worth having. So what is it? Well, first of all, the box contains a collection of four dongles to plug into the parallel, serial, video and mouse/joystick ports. They all have a collection of miniature coloured LEDs sticking out of the top. There is

FAULT FINDING

Of course, using a disk-based diagnostic package is only any use if you can get the disk drives to work. If your fault is pre-initialisation, then it will be necessary to run through the tests we have described in previous articles. With regard to specific components in your Amiga, here is a diagnostic chart which gives some indication of the relative responsibilities of most of the key ICs in your machine. It is only intended as a guideline, and does not indicate failure of minor components such as resistors or capacitors, but it does direct you towards the major components. This chart should be used to isolate a specific fault.

If at all possible, you should try to find a friend who is willing to let you try replacing various ICs or components from his machine. The simplest way to locate a fault is by the process of elimination. Start with the easiest and most obvious: disk, power supply, leads, monitor, disk drive, keyboard, mouse and so on – all of the components which are easily interchanged. Only when these checks have come up empty should you then consider interchanging internal ICs. If you do, always remember to observe the anti-static procedures fully, and take the opportunity when your machine is dismantled to clean up the various edge connectors and pins with isopropyl alcohol as described in this series in previous issues of *Amiga Shopper.*

PROBLEM	LIKELY FAULTY COMPONENT															
	68000	U6ROM	U4DENISE	U3 PAULA	U5 GARY	U7 8520	U8 8520	U1574LS157	U14 LF347	U37	U38	U39	DRAM	POWER SUPPLY	K/BOARD	FAT AGNUS
SCREEN BLACK	●													●		●
SCREEN WHITE				●		●				●						●
SCREEN GREEN					●								●			●
SCREEN RED		●														
SYSYEM FREEZE			●			●				●						●
NO KEYBOARD RE-SET					●											
PARALLEL PORT PROBLEM						●	●									
SERIAL PORT PROBLEM				●			●				●	●				
AUDIO PROBLEM				●					●							
MOUSE/JOYSTICK PROBLEM			●	●		●		●								
GRAPHICS PROBLEM			●													
NO RT. MOUSE BUTTON				●												
MOUSE AXIAL FAILURE																
DISK DRIVE PROBLEM	●			●	●	●	●									●

IF ALL ELSE FAILS

If you have carried out all of the procedures described in this series but you are still unable to repair your Amiga, then obviously you will need to have it repaired professionally. A few points to be aware of if this is your last course of action:

1 Always go to a reputable company, preferably one that you already know or one that has been recommended to you by someone with first-hand experience of its service.

2 When you take your machine in, have a full description of the nature of the fault written down and stuck to the machine with adhesive tape. The engineer will appreciate some simple guidance as to the nature of the problem.

3 Ask the repairers to contact you by phone, explain the nature of the problem and give you an estimate of the cost of the repair before they begin work. Ask also about the details of any warranty offered with the work.

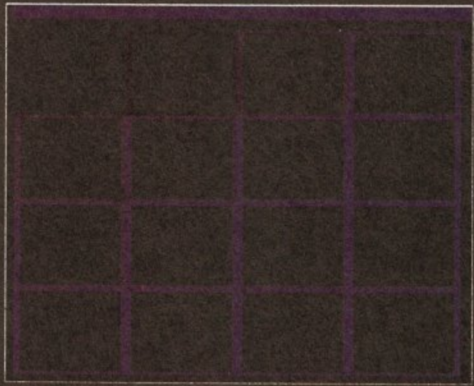
4 Ask for your bill to include specifications for parts supplied and labour costs.

5 When you collect your machine, ask them to demonstrate it working before you leave the premises. Check that they have remedied the specific fault you knew existed. If a peripheral had stopped working, such as a second drive or a hard drive, and you have tested it on someone else's Amiga and found it to be OK, then take it along with you and try it out before leaving. This avoids any embarrassing or annoying returns to the shop, saving you time and money.

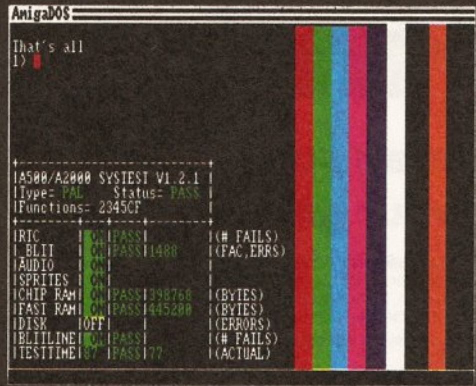
6 If the estimate given was for carrying out a certain repair and this has not been correctly done, then politely refuse to pay and ask to have the repairs done properly, according to the original estimate.

TESTING, TESTING...

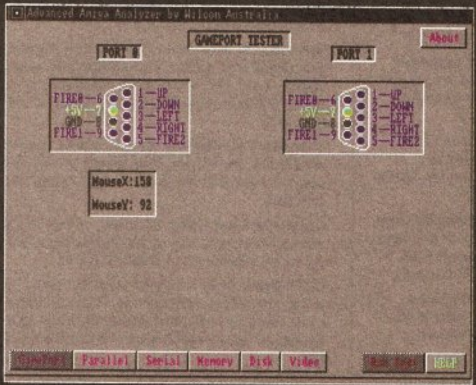
One quick way of identifying the source of a problem is running one of the diagnostic software packages available. Of course this can only be an option if you can get your disk drive up and running in the first place, but past that stage a diagnostic program can cut right to the heart of the matter. Here we take a quick look at two such programs, one from Commodore and the other a remarkable package from the US...



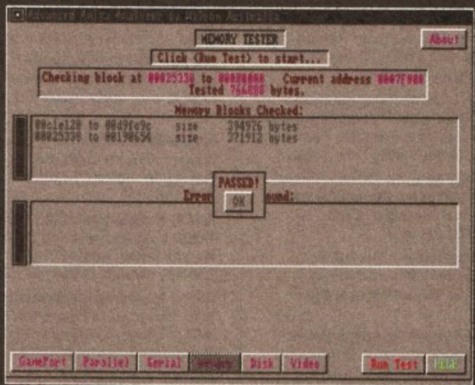
This is one of the early tests on the Commodore test disk. This check looks at the colour output from the Amiga, checking all of the HAM 4,096 colours available.



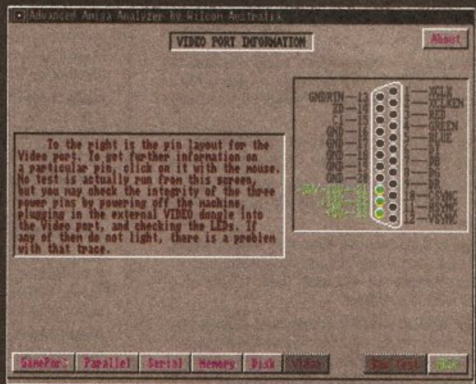
Of all the tests on the Commodore test disk, this is probably the most useful. This is the sprite/sound/disk/RAM test, and as you can see from the categories, there's a healthy collection of tests which run through your Amiga's systems, looking for possible faults. Unfortunately, while these are capable of identifying a fault, there is no indication of what remedial action is necessary to correct it.



This is quite a different ball-park. The *Advanced Amiga Analyser* really gets down to the business of seeking out problems, identifying their exact nature, and offering remedial action. Click on any of the pins shown on the joystick/mouse ports on-screen and you get a description of the function of that specific pin. When the software test is run, it checks each of the pins in turn, indicating with an LED if there is a malfunction. What lifts this package above all others is its ability to then offer you specific remedies for that fault – starting with the cheapest, to keep repair costs to a minimum.



As well as looking at the ports on the Amiga, The *Advanced Amiga Analyser* also investigates the memory. In this instance I have run the memory test on a 1.3 Amiga with a Commodore 512k upgrade, and as you can see from the locations identified, it has determined that all ICs are functioning perfectly, and that the entire memory is in good working order.



This grab shows the *Advanced Amiga Analyser* test for the Video port. Again all pins are identified, and their function described in a window. In this case I had thought I had a fault with my MIDI interface and was ready to plan surgery, when by chance the software told me that the +12v was down on both my serial and video ports. It then suggested I check a specific fuse, followed by one of the resistors, and that's where the problem turned out to be. This information was invaluable – the fault was not necessarily apparent, the Amiga worked fine, and I had no reason to suspect a problem.

also a disk, and a six-page photocopied manual. All this comes inside a VHS video-cassette case.

What does it do? Well, simply this: the software identifies each port in turn, and runs a series of tests through each pin. Various permutations of test are carried out, eliminating particular components, thus identifying specific faults. Each port is displayed as a test screen, and you can point and click on the representation of any pin on-screen to ascertain its function.

Not only does the software identify the problem, but it also offers a cure! When a fault is detected, it will display a message describing which components to look at on the motherboard, and what order to check them in, starting from the cheapest component upwards. I assure you this is not an amateur product. The information provided was expert, as I proved when I tested several poorly Amigas awaiting repair at a local dealer's: *Advanced Amiga Analyser* expertly diagnosed all of them correctly.

I even discovered why my MIDI interface had suddenly stopped working. Thinking it was the interface itself, I put it to one side with the intention of checking it over later. Not so. The *Amiga Analyser* told me there was no +12v to either the serial or video port of my 2000 – the result of my son pratting around with my modem while the computer was switched on, though the software didn't quite tell me *that*. It did suggest though that I replace a specific fuse and check a particular resistor. It turned out to be the resistor, and cost 14p to repair! So this really is a worthwhile package, and you could do a lot worse than to get it.

> **"It describes what components to look at, and in order – cheapest upwards."**

GO ON, HAVE A GO!

If you've been inspired by this series of guides to try seeking out and fixing any faults you might encounter on your own Amiga, always bear in mind that the simple things are best checked first. If your machine develops a fault you can trace to a particular area, and it just so happens that you have been fiddling around there recently, then it's more than likely that you have caused the problem yourself. If so, always retrace your steps, expecting to find something you forgot to re-connect or replaced wrongly.

Be careful, but be confident! AS

Have you missed any of the earlier instalments of WorkShopper Workshop in *Amiga Shopper* from issue 23 to date? Turn to page 117 for the *Amiga Shopper* back issue service!

Find your local group

There's sure to be a group of Amiga users near you! If your group isn't here, just send in the form below

1-1 Amiga Club Postal software, ideas etc. SAE + blank disk for details. Contact Peter Duckett, 11 Avon Close, Addlestone, Surrey KT15 1JO ☎ 0932 855834 after 8pm. Membership free.

1520 Plotter Group (ICPUG) John Bentley ☎ 06286 65932

16-32 Micro Programming AMOS, bimonthly fanzine, PD, (Fish->590) Membership 100FF or £10. Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France ☎ 315220 02

24 Bit Club For users of Video Toaster, Opal Vision, DCTV and AAGA machines. Contact Gordon Keenan, 21 Skirsa Place, Glasgow G23 5EE. Send stamp for details. Membership fee £20 a year.

Action Replay Users Club For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR

Aden PD Advice and Amos for beginners, cheats. Free membership. SAE plus disk to Den Rounding, 8 Primrose Lane, Miami Beach, Trusthorpe Road, Sutton-on-Sea, Lincs LN12 2JZ

Albit Computer Club General hints and tips, advice, competitions, draws, shop. Entrance fee £1.50. Contact Mick, 170 Claughton Ave, Crewe, Cheshire CW2 6ET

Alpha PD Contact Greig Harper, 3 Whickham Street, Easington, Peterlee, Co Durham SR8 3DJ.

Amiga Addicts Newsletter and open nights For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland

Amiga Artists Club 34 Roundhay Mount, Leeds LS8 4DW. For Amiga artists, musicians and coders. Pirates not welcome. Free. ☎ Kam on 0532 493942, 5-8pm

Amiga Athens club PD swaps, tips, cheats etc. Free membership, just new PD or tips in exchange for our services. Contact Stefanos Papamichael, 9 Derfeld Rd, Patisia, 11144 Athens, Greece. ☎ 01/2027973

AmigaBASIC club Free bi-monthly disk, help for beginners and experts. Membership £10/year. Contact: Conran Ahmad, 15 Weybridge Rd, Thornton Heath, Surrey CR7 7LN ☎ 081 689 9102

Amiga Beginners' Club 110 Whitehill Park, Limavidy, Co. Londonderry BT49 0QG. Club to help newcomers. Bi-monthly club disk, and a small PD library. Membership £2 for a single disk, or £20. for every issue

Amiga Boatowners All things nautical, WHY exchange, nautical aid programs etc. Free membership, send SAE to D. Beet for details. Lock, Branston Fen, Lincolnshire LN3 5UN

Amiga Club Newsletter, disks, PD etc.£10 membership. Send SAE for details to Imp, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6SE ☎ 081 455 1626

Amiga Graphics Club I want to set one up! But to do so, I need your help, If enough of you reply, your graphics can only benefit. For details you should write to Jonathan McBrien, 16 Drumbawn, Enniskillen, Fermangh BT74 6NF

Amiga Helpline Contact Gordon Keenan, 21 Skirsa Place, Glasgow G23 5EE. Software/ hardware help service, free PD, DTP problems sorted, plus general Amiga chit-chat. Send a stamp for full details. Membership £15 per year

Amiga Mania Bi-monthly publication (28+ pages). Public domain, licenseware, bargains, classifieds, free advice, free gifts, free disks. Annual membership £12. Contact D Cryer, 88 Blackbull Rd, Folkestone, Kent CT19 5QX

Amiga Maniacs Help Graphics, sound, WB, programming, help. Beginners welcome. Free membership (by post). Contact Johnny, 8 Tan-y-Grais, Caernarfon Rd, Bangor LL57 4SD

Amiga Musicians Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus

Amiga Navigation Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan. PD, advice, even small repairs and social evenings. Weds 7 – 9pm. Membership £10 per year

Amiga Network International 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE

Amiga Utd Disk based, reviews, competitions, help service, BBS, games and utils. Contact D Collingwood, 14 Linden Close, Hutton Rudley, Yarm, Cleveland TS15 0HX. Membership £10 a year.

Amiga Users Klub, Windsor House, 19 Castle St, Bodmin, Cornwall PL31 2DX. Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga and to help solve people's problems. Contact Jack Talling

Amiga Video Producers' Group Disk magazine five times a year; meets quarterly in Swindon. Object library for mainstream Amiga 3D programs (*Imagine, Sculpt, VideoScape*, etc). For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swindon, Wilts SN5 6AB ☎ 0793 870667 before 9pm. Membership fee £10 a year.

Amiga Witham Users' Group 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and Basic programs. K Anderson ☎ 0376 518271

Amigaholics Club Disk magazine covers PD, programming, music, art, DTP, and more. Free membership. Contact Kevin Bryan, 49 Coutts House, Charlton, London SE7 7AS ☎ 071-580 2000 Ext 240

AmigaSoc PD, tips, cheats, MIDI, programming, disk magazine, all welcome. Free membership. Contact Neil Cartwright, 17 St Winefrides Ave, Manor Park, London E12 6HQ ☎ 018 553 5434

Amiga Users Group Part II Advice, technical support, BBS, PD library, tuition, etc. Contact Andy Wilkinson, 25 Glen Eldon Road, Lytham St Annes, Lancashire FY8 2AX ☎ 0253 724607. Free membership.

Amiga Users Luton We need more members. Help and advice/exchange of information, swapping PD/games, general chat. Free membership. Please phone Dave J Noble on 0582 502806

Amigos PD Large PD library – £1 for catalogue disk. For more details contact Roland Arnold, 16 Mayfair Ave, Ilford, Essex IG1 3DL ☎ 081-554 5160

AMI-INFO Interested in the serious side of the Amiga? then send and SAE to Paul Caparn, Homeside, Higher Warberry Road, Torquay, Devon TQ1 1SF.

AMOS Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS

AMOS Programmers Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD

AMOS Programmers Group John Mullen at 62 Lonssdale St, Workington, Cumbria CA14 2YD. Hints, tips, tutorials too. SAE for info. £10 membership for bi-monthly disk mag

Angus Amiga CDTV club Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership

APDEG (Amiga Public Domain Exchange Group) Laser printing service, free PD, Advice service, util disks for members, PD swaps. Contact Richard Brown, APDEG, 18 High Street, Mundesley, Norfolk NR11 8AE ☎ 0263 720868. Membership fee £6 a year.

Artman News, views, reviews, free PD for your articles. Free membership. Send blank disk + SAE for free disk mag and 2 free games to A Greenwood, 40 Northwell Gate, Otley, West Yorks LS21 2DN ☎ 0943 466476

Asia Amiga Association Newsletter, PD, information, advice, ideas, exchanges. Membership HK$250 per annum. For more info contact Pete Alex, Room 11c, Fortune Court, 4–6 Tak Hing St, Kowloon, Hong Kong. ☎ 7245196

Astro PD Send SAE and blank disk for catalogue. Help and advice also available. Contact D Benson, 3 Skiddaw Court, Nunthorpe, Middlesbrough, Cleveland TS7 0RD

Atlantic Wave BBS 100s of files for download. DTP, clip art, graphics, utilities. First 200 members get unlimited downloads for life. Free membership. Message areas ranging from sport to cookery. All Amiga BBS. Call 0462 481745 (300 – 2400 baud 8nl) 24 hours a day.

AUGFL vzw bi-monthly newsletter, PD, distribution & support of Belgian programs, registration-site, tips. 750 Bfr/year membership. Contact Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium

Avon Micro Computer Serious Club The first Sunday night of each month 1900-2200, members 50p guests £1. Centre for the deaf, 16-18 King Square, Bristol BS2 8JL Fax: 0272 311642

Basic Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of Basic, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall ☎ 0924 892106

Batty's PD Everything to do with PD – friendly help and advice. Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR ☎ 0604 22456. Membership £3.99 for life.

Beaconsfield and District CC Contact Philip Lishman ☎ 0494 782298 27 Russell Court, Chesham, Bucks. Meetings at St Michaels Hall, St Michaels Green, Beaconsfield 7.45 – 9.45pm. Programming, gaming swapping PD, having fun. Membership £10 for 6 months

Bible Bureau online scripture output and informal bible study. Quarterly meetings, membership £5 quarterly. Contact A.D., 24 Brodie House, 10 Harcourt Avenue, Wallington, Surrey SM6 8AR ☎ 081 669 7485

Bloomfield Video and Computing Beginners, video techniques. Meetings at Bloomfield Community Centre, Narberth, 7.30pm alternate Tuesdays. Membership £5. Contact Mrs Beryl Hughes, Nashville, 50 Glynderi, Carmarthen, Dyfed SA31 2EX ☎ 0267 237522

Bournemouth Amiga Club Problems, fun, social beginners welcome. Free. Contact P Chamberlain, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA ☎ 0202 296714

BR & CJ Computer Club B Robinson at 23 Fairway Rd, Shepshed, Loughborough, Leicestershire, LE12 9DS ☎ 0392 72889 or 03922 841296. Regular disk mag packed with tips, reviews of games and serious software, game cheats database, demos and utils, very large PD library. Membership fee £1.25

Bus Stop PD from 40 to 75p per disk, cheats, classifieds and gossip, plus competition every 2 weeks. Send SAE and 50p for catalogue. Lisa Tyree, 5 Westbourne Rd, Marsh, Huddersfield HD1 4LQ

Cacophony (Unlimited) Aims to create quality PD with AMOS and others. Help given. Mark Wickson, 49 Perrott Close, North Leigh, Witney, Oxon OX8 6RU

Camberley User Group Lectures, competitions, advice, meetings, free membership. For more info contact F Wellbelove ☎ 0252 871 545

CDTV Users Club Technical support, news, compiling compatible software list. Free membership – just send SAE. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES

Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire, DL9 3HE

Cheapo PD Club Non-profit making postal PD, newsletters, advice. Membership £5. Contact Jason Meachen, Ivy Cottage, Chapel Road, Beaumont, Clacton, Essex CO16 0AR

Chester-le-Street 16-Bit Computer Club Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Meets Mondays from 7.30-9.30pm. Exchange advice and swap tips. ☎ Peter Mears 091 385 2939

Chic Computer Club Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. For info contact Steve Winter ☎ 0753 884473

Chris's PD Great value public domain compilations. Send SAE for list. Contact Chris Coaite, 22 Merryfields Avenue, Hockley, Essex SS5 5AL.

CHUD Free membership. Send SAE for details to Mr M Sellars, 103 Newward Rd, Bulford, Salisbury, Wilts, SP4 9AH ☎ 0980 33154

Club 68000 Competitions, programming, music. Meets Harrogate Leisure Centre, Mondays 6.15pm-10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks, HG3 1EJ ☎ 0423 891910

Club Amiga £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear

Club Futura Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library. Membership A$24. Comp-U-Pal, 116 Macarthur Street, Sale, Victoria 3850, Australia

Computeque Steve Lalley at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs on 0695 31378 7.45pm – 10.30 pm every Tuesday. From beginner to advanced user. Half year membership £2.50 children, £3 adults

Computer Club 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480. A 16-bit club dedicated to being computer enthusiasts Membership costs £15 per year

GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS26

Group name ....

Type of activities ....

....

Place of meetings ....

Time of meetings ....

Contact name ....

Contact telephone number ....

Contact address ....

....

....

Membership fee ....

Cosmic PD Contact Stephen Fernie, 8 Drakies Avenue, Inverness IV2 3RW. Membership free; disks 50p – £1. Catalogue disk £1.

Danish AMOS user group Bimonthly disk mag, £2 each, PD library. SAE for info. Contact Tom Poulsen, Stenmøllen 28, 2640 Hedehúsene, DK Denmark ☎ 42 16 54 84.

Darlington Commodore Users Club News, discounts, cheap PD, advice, newsletter and more. Annual membership £5. For further info contact S Wheatley, 1 Ruby St, Darlington, County Durham DL3 0EN

Deluxe Cheats Disk User Group Steven Frew at 96 Campden Green, Solihull, West Midlands, B92 8HG. Software advice. Updates every 2 months! £4 for disk £2 for updates

East Midlands Amiga User Group Self-help group for beginners and experienced users. Meet Willoughby Scoial Club, 7–10pm every Wednesday evening. Contact Richard Haythorn, 70 Felstead Road, Aspley Estate, Nottingham ☎ 0602 298075. Membership £5 a year.

Edinburgh Amiga Group Membership £5, includes free advice and PD. Contact Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE with SAE

Enfield Amiga club For info contact Sean Clifton ☎ 081 8042867 32a Hoe Lane, Enfield, Middx Meet, swap, competitions, helping new users

Enterprise PD 'Free' PD if you supply disks and postage. Membership £25 per year, £5 per month. T McLoughlin, 229 Barking Road, East Ham, London E6 1LB ☎ 081 472 0434

Eureka PD Small library with friendly service. 70p per disk. Contact Liam Allen, 5 Hartwell Close, Northampton NN2 8TT

Exeter 16 Bit User Group Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Programming £6 per annum

Free PD Club Send disk + SAE for more info to Adrian Porter, 237 Prince of Wales Rd, Manor, Sheffield S2 1FG. Free membership

FST Amiga Club Bi-monthly newsletter, all types of activities. For £15 membership you receive one free commercial game + one PD disk + 11 further PD disks, one per month. Contact Tel or John, 17 Grasmere Close, Penistone, Sheffield, Yorks S30 6HP.

Fylde Computer Club All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502

Galactik PD Swaps and sells PD. Contact E Newsome, 10 Crugan Ave, Kinmel Bay, Clwyd LL18 5DG. Demos, music, utilities, games, 99p for catalogue disk

Game Swap Club Swap original software and hardware. Membership £3. Contact Ade Ajidahun, St Andrews House, 125 North Road, St Andrews, Bristol BS6 5AH ☎ 0272 240399

Gamer-Link International pen-pal club for gamers. Free swap service, advice on tips and cheats. Life membership £5. Contact Stu, 28 Churchfield, Ware, Herts SG12 0EP.

GFA Basic Forum Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Free membership

Gibraltar Amiga Users Club PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918

Guru Masters PD demos etc, contact the Sheriff, 111 Sherbourne Rd, Banbury, Wolverhampton, WV10 9EU ☎ 0902 782277

Hampshire PD Club Mike Gallienne at 79, Carless Cl, Rownes, Gosport, Hants, PO13 9PW on 0705 585323. Public Domain Disks at 35p. Monthly competitions. SAE for more info to the above address. £10 a year

Harleys PD Swaparama Public domain swapping by mail. Contact G Varney, 140 Weston Drive, Otely, West Yorks LS21 2DJ ☎ 0943 466896

Hastings Amiga Group Disks compiled from best of PD at only 99p. Send 2 stamps for catalogue. Contact Gordon Lindsay, 153 Parker Road, Hastings, E Sussex TN34 3TP

Hereford Amiga Group Membership free, help, exchange of PD and shareware. Lotus Turbo 2 Quad Player Championship. Contact John Macdonald, Alma Cottage, Allensmore, Hereford HR2 9AT ☎ 0981 21414

Hermit Computer Club Hardware help and information, program swapping. Meetings 7-10pm, Mondays. Membership £3 per term, 50p per night. Contact John Maynard, Hermit Centre, Shenfield Road, Brentwood, Essex CM15 8AG ☎ 0277 218897

Highland PD Free PD list contains lots of education, business and games disks. Free advice to beginners. Contact David Paulin, 255 Drumrossie Avenue, Inverness IU2 3SX ☎ 0463 242431.

Hornesoft PD Over 2000 Amiga PD from 20p to 69p. Send SAE for free disk catalogue. Contact Chris Horne 23 Stanwell Cl, Wincobank, Sheffield S9 1PZ

HTS (Malta) Free membership. Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023

Hyndburn Amiga Users Club Tuition, advice, PD, and more. Meets Mondays, 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289

Imagine Object Makers Will make Imagine objects of most forms and supply already-produced objects under request. Send SAe for more info. Contact Charles Mo, 16 Calder Crescent, Taunton, Somerset TA1 2NH. Membership free; charge for each object only.

Impulse BBS Comms, chat, files, games and chat. Contact James Norris ☎ 081 698 8978, online 10pm till 6pm the next day. 14.4 HST.

Incantation PD PD exchange and correspondence, tips etc + A600 support. Contact Jez, 28 Sandfield Villas, Tadcaster, N Yorks LS24 8AW ☎ 0937 835019. Membership free, disks £1.

Independent Commodore Products Users' Group Free PD software, 100 page journal, technical helplines and discounts. Contact the Membership Secretary, PO Box 1309, London N3 2UT ☎ 081 346 0050 after 6pm, or your local branch:
Chelmsford ☎ David Elliott 0245 460189
Coventry ☎ Will Light 0203 413511
Dublin ☎ Geoffrey Reeves 010 353 1 288 3863
Exeter ☎ John Buckle 0392 214760
Macclesfield ☎ Peter Richardson 0298 23644
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Stevenage ☎ Brian Grainger 0438 727925
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Wigan ☎ Brian Caswell 0942 213402

In Touch Amiga Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ

JJC Amiga correspondence course £50 per year. Contact PO Box 19, High Wycombe, Bucks HP11 1UF. ☎ 0494 983347

Kent Youth Computer Group Contact Jim Fanning ☎ 0233 629804 North Youth Centre, Essella Rd, Ashford, Kent. Meetings at the North Youth Centre, Thursdays 7 – 10pm computer fair visits, video and DTP work, monthly newsletter Membership 40p per month

KT's PD library Amiga contacts, swaps. etc. 80p each disk. Contact J Hicks, 75 The Drive, Rochford, Essex SS4 1QQ ☎ 0702 542536. SAE for catalogue disk.

Langham PD Send SAE and blank disk for a free virus killer ans catalogue. Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WU8 1PL.

Londonzone PD PD library, swaps and copying, cheats and hints disks. Contact S J Wynne, 333 Bowes Road, New Southgate, London N11 1BA ☎ 081 368 4634. Meet 2nd Wednesday every month. Membership free; send blank disk + stamped SAE for library disk.

Lothian Amiga Users Group Contact Andrew Mackie ☎ 0506 630509 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR Advice and help in buying hardware, software etc, group buying, dealers' circulars welcome. Membership free

Magic Windows H/W projects, programming, PD, help and advice on all topics, beginners welcome. For more info send SAE to Frame, 26 St Benets Road, Stalham, Norwich, Norfolk NR12 9DN

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447

Marksman (Trojan Phazer user group) Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB Promotes use of the Trojan Phazer, swaps PD and own programs, disk magazine

Master PD PD from 79p, general help. For info send SAE. Contact Alan Hines, 44 School Lane, Eaton Bray, Beds LU6 2DT. Membership free.

MED Users Group Club for all users of OctaMED. Bi-monthly disk magazine, advice, news, competitions. Contact Richard Bannister, 6 Glevum Road, Swindon, Wilts SN3 4AF. Membership free, send SAE for details.

Melton Amiga Users PD, serious, advice. No pirates. Beginners & experts welcome. Contact Stephen Mowbray, 68 Ferneley Crescent, Melton Mowbray, Leics LE13 1RZ ☎ 0664 63421 eves.

Navan Computer Club Software reviewing, graphics, business, ews and chat. Meet various hotels in Navan, 7.30–9pm. Contact Mark Arnold, Cannistown, Navan, Co Meath, Eire ☎ 046 21078. Membership £6 per year.

N Ireland Amiga User Contact Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS. Disk based mag £2.50 per issue. Free PD, SAE for further info

New Hall Amiga Users Club Games, graphics, music, Workbench programming. Meets 7pm every Tuesday, New Hall Social Club, 104 Bury Rd, Dawtenstall. Membership £5 per year, under 16s not allowed. Contact Bill Grundy, 115 Stanley St, Accrington, Lancashire ☎ 0254 385365

Numero Uno PD, swapping, competitions, pen pals. £3.50/year. Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP

01 Surrey PD Commerical software swap, classified ads, disks 95p each. Contact Craig Tongue, Copthorne, Epsom Rd, Leatherhead, Surrey KT22 8SP ☎ 0372 374956.

Pascal Programmers Group Disk-based newsletter for HighSpeed Pascal users. Free membership. Contact Colin Yarnall, 93 Manchester Rd, Wilmslow, Cheshire SK9 2JQ

Pennine Amiga Club 26 Spencer Street, Keighley, West Yorkshire BD21 2BU. Free membership, free advice and a newsletter. Contact Neville Armstrong for more info ☎ 0535 609263

Perth and District Amateur Computer Society For further information contact Alastair MacPherson 137 Glasgow Rd, Perth. Meetings third Tuesday in every month, 8pm. General advice, talks, Amiga PD. Membership £6 or free for under 16s

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Public Domain User Group Swaps PD, provides advice. SAE to 12 Oxford Rd, Guildford, Surrey

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Quality Amiga PD Only £1.20 per disk. Send SAE for free catalogue to John MacLeod, 4 Worcester Avenue, Grimsby, South Humberside DN34 5EY

Redburn Computer Users Group Help, ideas, PC, graphics and business. Meets every second Wednesday 6.30 pm to 9.30 pm. Contact Ruby Anderson ☎ 0294 313624.

Robotronix Amiga Club Bi-monthly newsletter, tips, cheats, programming support, advice. Send SAE for details. Contact P Symonds, 36 Century Road, Cobholm, Gt Yarmouth, Norfolk NR31 0BX ☎ 0493 667161, Membership £15 a year.

Rye Amiga Group Regular newsletter, swap/meet at the Rye Community Centre. For info contact Oliver Campion, 71 The Mint, Rye, E Sussex TN31 7EW ☎ 0797 222876

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Sherlock PD Quarterly disk mag, help and advice for beginners. 50p per disk. A Doyle, 44 Milton Street, Warrenpoint, Co Down, N Ireland

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Sittingbourne Co-op Computer Club Programming, PD, games, free write-in advice service. £10/year, £5 unwaged. Meetings Mondays 6–9pm at Mall beneath Regis Suite. Contact Andy, Unit 11, The Mall, 121–127 East Street, Sittingbourne, Kent ME10 4AQ ☎ 0795 842608

Slim Agnus 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. Group meets the last Thursday of every month. PD library, BBS, advice from Amiga experts. Contact Philip Worrel.

Software City Swapping, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollis Close, Manor Estate Farm, Rawmarsh, Rotherham, S Yorks S62 7LX or ☎ 0709 526092

Software Exchange Club Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, County Wexford, Republic of Ireland

Software Exchange Service 13 Bournville Lane, Stirchley, Birmingham, West Midlands B30 2JY. For more info ☎ Michael Pun 021-459 7576

South 16 Amiga/ST User Group Bi-monthly disk based mag, discounts available from local stores, free advice and extensive PD library. £12/year. For more info send SAE to PO Box 16, Southampton, SO9 7AU

Southend Team Music, PD. Free membership. Contact Scotty, 52 Prince Avenue, Southend-on-Sea, Essex SS2 6NN ☎ 0702 333974

Southport Amiga Users Advice, friendly evenings Mondays at 8pm. No charge, discounts from local store. For info contact Michael Mitcham, 5 Easdale Drive, Ainsdale, Southport, Merseyside ☎ 0704 79936

South Wales Club Newsletter, PD library, free newsletter, programs, help and advice. For more info contact D Allen 53 West Avenue, Trecenydd, Caerphilly CF8 2SF

Steel PD, cheats, ideas, music, art, programming, hardware mods. Free membership (postal only). Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB

Tay-Soft PD Club Non-profit-making postal PD, advice, Disk newsletter, Helpline 6–10.30pm. Contact Dave Thornton, 46 Balmerino Road, Dundee DD4 8RR ☎ 0382 505437. Membership £2.50 (free Utils disk on joining).

Tazmania PD For quality PD come straight to me. Send blank disk and SAE. Contact M Hewson, 4 Boultham Avenue, Lincoln LN5 7XZ ☎ 0522 538706 after 6pm. Membership free; £1.25 per disk + 60p p&p.

The Amiga Club Monthly newsletter, competitions, software exchange, huge PD library, cheats, tips, reviews. Contact G Starling, 31 Pine Lea, Brandon, Durham DH7 8SR. Membership £10 life plus two free games and DCopy.

The Amiga Studio Friendly, helpful advice for serious users of the Amiga. Monthly newsletter, PD library, free loan of equipment to members, bar. Meets 7pm Tuesdays, Mitchells Club, Scotia Road, Tunstall. Contact Dave Rose ☎ 0782 815589

Touch 'n' go PD Cheap and new PD. Phone for free disk list. Contact Timothy Whitby, 54 Palmerston Road, Buckhurst Hill, Essex IG9 5LH ☎ 081 504 4217.

Twilight Advice on hardware and software,Fred Fish PD. Free membership, disks 50p each. Contact 13 Mavis Court, Ravens Close, London NW9 5BH

UK Subs The Hanger BBS, trading post for PD files, swapping. Free membership. Contact Diddy / Arklight ☎ 0525 875518

Unique Styles Derek at 15 Montgomery Rd, Highbrooms, Tunbridge Wells, Kent ☎ 0892 518319. By post only. For Amiga artists, programmers/musicians. Free membership

Video Visuals Exclusively for video producers, PD library, genlocking, digitising, quarterly disk magazine. Membership £10 per year. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG

Wardray Hern Consortium User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection – worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX

Warpdrive Help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 per year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715

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Worldwide PD Club Over 2,680 disks held; send blank disk and stamped addressed jiffybag for catalogue disk. Contact Dave White, Berliner Str 39, 4030 Ratingen 1, Germany ☎ 02102 499729 (Germany). Membership DM60 a year or DM6 a month.

Wrexham District Computer Club PD, library, equipment loan. 10p to join, 50p to get in. Meetings at the Memorial Hall, Wrexham every Thursday, 7-10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU

Zymurgy General Amiga computing. Free membership. For further info contact A Carr, 39 Sewlkirk Rd, Ipswich, Suffolk IP4 3JB ☎ 0473 725241

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Issue 26

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On the point of chaos

***Conrad Bessant** strikes out into fractal landscapes.*

Fractal landscape generation is the only area of chaos theory that has found a significant place in the commercial Amiga world. There are landscape-generating programs like *Vista*, and landscape techniques are also used to generate terrain in an increasing number of games, including *Populous* and *Sim City*.

Note that all the example programs in this article are written in GFA BASIC. This is because when drawing solid-looking landscapes it is necessary to draw fairly complex filled polygons, something which our regular language, Amiga BASIC, is not good at. As usual, however, the examples are self-documenting, so conversion to AMOS, Hisoft BASIC or C is quite straightforward.



A totally random landscape looks far from realistic. Clearly chaos isn't imitating nature in this instance



Controlling the randomness produces a more natural look, and flattening parts of the landscape adds an effect of water

THE ALGORITHM

Like last month's fractal plants, landscapes can be created using a rule-based approach, rather than a mathematical one. This makes the process much easier to understand. To get the general idea of the set of rules (or algorithm) involved, let's begin in a two-dimensional world.

Drawing the cross-section of a landscape is not a problem – it's just like plotting a simple line graph with the vertical position of each point representing the height of a point on the landscape. The difficulty is deciding what height to make each point. To get a different landscape each time it is obviously necessary to use some degree of randomness. As a first attempt we could try giving each point a random height between –10 and +10 pixels.

The result of this is shown in the first silhouette at the top of the page. You don't need to be a geographer to see that this doesn't look very realistic. One way to make the sharp changes in height less pronounced would be to reduce the range of random values, but this would make for very boring landscapes. What is really required is some kind of controlled randomness – as in the Sierpiñski triangle back in *Amiga Shopper* 18.

One way to control the randomness and make the changes in height more gentle is to base the height of each point on the height of the previous point. This process is loosely referred to as "inheritance".

A simple example of this can be demonstrated using listing 1, which plots a landscape cross-section.

In this example the first point (at the left of the screen) is set to be at a height of 100 pixels. A **FOR...NEXT** loop then begins to draw the rest of the points, whose heights are calculated by adding a random number, between –2 and 2, to the height of the previous point. This results in a less jagged silhouette, although the result will of course be different each time the program is run because of the random element in the process. The roughness of the terrain can easily be altered by changing the range of the random number added to the previous point – for instance, replacing **y=y+RANDOM (5)-2** with **y=y+RANDOM(3)-1** will give gentler slopes.

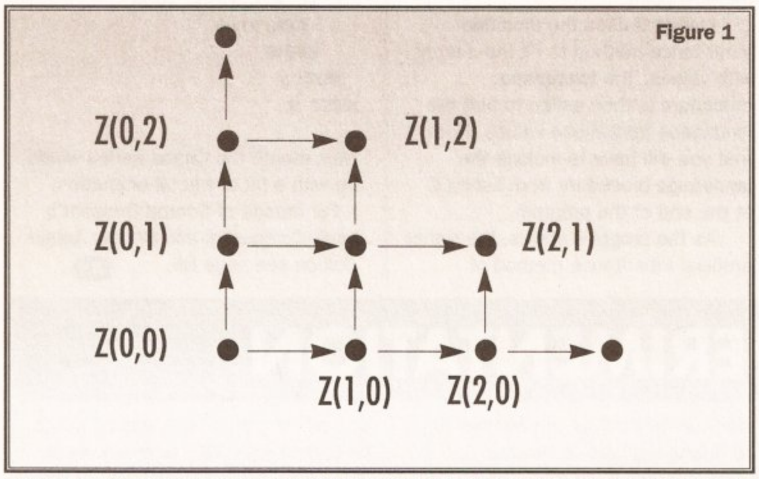


Figure 1 – plotting points by "inheritance". The height of each point is based on the height of any adjacent point which has already been calculated. If two adjacent points have already been calculated, then the height of the new point is based on the average height of these two points

FLOODING

By flattening points below a certain height, you can create the effect of lakes, rivers or seas between pieces of land, as in the second silhouette. "Flooding" can be added to listing 1 by replacing the **DRAW TO** line which draws between points with the **IF...ENDIF** construct shown below. This will cause all points with *y* positions below "sea level" to be plotted as if their *y* positions were 100 – that is, "sea level" is 100. Note that the value of *y* is not actually altered, because this would upset the inheritance process.

```
IF y<100
  !If y is above sea level
  DRAW TO x,y
  !Draw line to new point
ELSE
  DRAW TO x,100
  !Draw line at sea level
ENDIF
```

Because of the random nature of the process, the entire landscape may sometimes be underwater, so it may be necessary to run the program again to get a realistic landscape.

You may also find that this program produces an unnaturally large number of very small islands, particularly around larger areas of land. In the real world these would be eroded away by the surrounding water. A similar process can be incorporated into the program to remove the islands – it is simply necessary to scan the landscape and

LISTING 1

```
COLOR 1
y=100
    !Set initial y position
PLOT 20,y
    !Plot the position
FOR x=21 TO 620 STEP 2
 y=y+RANDOM(5)-2
    !Calculate new y value
 DRAW TO x,y
    !Draw line to new point
NEXT x
```

LISTING 2

[Note: do not type a return at ↵]

```
PROCEDURE landscape
  CLS
  DEFFILL 1,0
  BOUNDARY 1
  COLOR 1
  FOR y=47 TO 0 STEP -1
    FOR x=0 TO 47
     poly_x%(x)=x*10
     poly_y%(x)=-z(x,y)
    NEXT x
    IF y<47
     FOR x=0 TO 47
     poly_x%(95-x)=x*10+3.4
     poly_y%(95-x)=↵
     -z(x,y+1)-1
     NEXT x
     POLYFILL 96,poly_x%↵
     (),poly_y%() OFFSET ↵
     y*3.4,(148-y)
     FOR x=0 TO 47
     DRAW poly_x%(x)+y*↵
     3.4,poly_y%(x)+148-y ↵
     TO poly_x%(95-x)+y*↵
     3.4,poly_y%(95-x)+↵
     148-y
     NEXT x
    ELSE
     POLYLINE 48,poly_x%↵
     (),poly_y%() OFFSET ↵
     y*3.4,(148-y)
    ENDIF
  NEXT y
RETURN
```

replace any small islands with a flat line at sea level.

ANOTHER DIMENSION

In the real world, landscapes are not simply cross-sections, they are three-dimensional, so to draw them we need to find a technique which will allow plotting in three dimensions. The programming needed to do this is unrelated to chaos theory, so we won't go into it in detail, but I've provided a ready-to-use procedure called **landscape** (listing 2) so you can concentrate on the algorithms which generate the landscapes.

The **landscape** procedure draws a solid-looking plane from the data describing the height of each point stored in the 48 x 48 element *z* array. Don't expect any colours or *Vista* style shading from this routine, it is just a very quick and minimalist means of experimenting with the various landscape algorithms.

Listing 2 is only a procedure and is totally useless on its own – if run in the form given, it will do nothing. To use the procedure it is necessary to dimension two 96-element temporary storage arrays (called **poly_x%** and **poly_y%)** and also the 48 x 48 element *z* array. The height of each of the points on the plane should then be placed in the correct elements of the *z* array before **landscape** is called to plot the plane.

As an example, a landscape could be plotted with a 40 pixel high pillar near the middle of the plane by adding the following lines to the head of listing 2:

```
DIM poly_x%(95) !Obligatory
 ! array dimensioning
DIM poly_y%(95)
DIM z(47,47)
'
z(23,23)=40       !Set the
 ! height of one of the points
'
GOSUB landscape
    !Draw landscape
```

Naturally it would be impractical to set the height of all the points in this way (there are over 2,000 of them!), so a nested pair of **FOR...NEXT** loops is generally used to fill the array instead.

THE ALGORITHM APPLIED

Now that we have a method of plotting a 3D landscape we can expand the algorithm described earlier for two dimensions to determine the height of each point on the three-dimensional plane, thus creating a natural-looking landscape.

In three dimensions the inheritance pattern is slightly different from the two-dimensional version, because each point has up to two adjacent points from which to inherit values, as shown in figure 1. It can be seen from this diagram that the first point calculated, at (0,0), is completely random because there are no adjacent points from which heights can be inherited. Other points along the left and lower sides of the plane have only one adjacent point whose height has been calculated, so they inherit their height from a single point only, as in the two-dimensional example in listing 1. All other points on the plane have two processed neighbours, so the heights of the two adjacent points are combined – by adding them together and dividing the result by two. The resulting value is used to determine the height of the new point.

Listing 3 uses the modified inheritance method to fill the *z* array with values. The **landscape** procedure is then called to plot the landscape from these values. Note that you will have to include the **landscape** procedure from listing 2 at the end of the program.

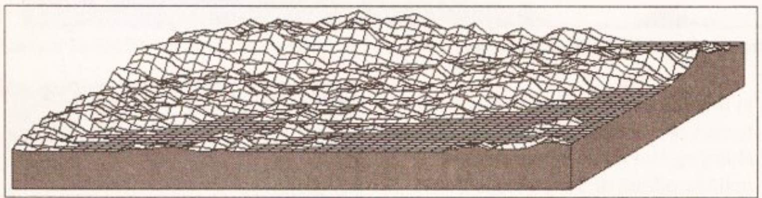
As the program shows, the rather artificial inheritance method of determining the height of the points produces surprisingly realistic landscapes, as on this page.

A "flooding" effect can easily be added using a similar method to the two dimensional one introduced above. It simply necessary to scan the *z* array and raise any sub-zero elements to zero before the landscape is plotted. This can be done by adding the following few lines before the **GOSUB** line which calls the landscape procedure:

```
FOR x=0 TO 47
 FOR y=0 TO 47
   IF z(x,y)<0 THEN
    z(x,y)=0
   ENDIF
 NEXT y
NEXT x
```

Next month the Chaos series winds up with a bit of fractal animation.

• For details of Conrad Bessant's book *Computers and Chaos: Amiga Edition* see page 86.



A landscape produced by Listing 3 with added water effect – but the shaded sides of the landscape have been added by hand

LISTING 3 • LISTING 3 • LISTING 3

[Note: do not type a return at ↵]

```
DIM z(47,47)
DIM poly_x%(95)
DIM poly_y%(95)
'
PRINT "Calculating..."
'
FOR x=0 TO 47
 FOR y=0 TO 47
   IF x=0 AND y=0
!(0,0) - no inheritance
     z(x,y)=RANDOM(5)
   ENDIF
   IF x=0 AND y>0
   !Left edge of plane - ↵
   one neighbour
    z(x,y)=z(x,y-1)+↵
        RANDOM(5)-2
   ENDIF
   IF x>0 AND y=0
   !Nearside edge - one ↵
   neighbour
    z(x,y)=z(x-1,y)+↵
        RANDOM(5)-2
   ENDIF
   IF x>0 AND y>0
   !Rest of plane - two ↵
   neighbours
    z(x,y)=(z(x,y-1)+z↵
   (x-1,y))/2+RANDOM(5)-2
   ENDIF
 NEXT y
NEXT x
'
GOSUB landscape
'
'Include the landscape
'procedure here
```

FURTHER EXPERIMENTATION

By far the most complex component of any fractal landscape generator is the routine which actually plots the landscape to the screen. Since this has been provided (the **landscape** procedure) it is easy to experiment with various landscape generation algorithms. Though our inheritance-based method of landscape generation produced realistic results, this is not how real landscapes are formed. However, there is no reason why we cannot simulate the real processes which shape the Earth and use them to generate landscapes on the Amiga.

One process which is easily simulated is "faulting". A fault is created on a landscape by dividing the landscape into two pieces with a straight line and then raising or lowering one of the pieces. After you've performed a large number of faults, a fairly realistic, often mountainous, landscape results.

OLD FAVOURITES IN 3D

In the "Further experimentation" boxouts throughout this series it has been suggested that some fractals, such as the Mandelbrot set and Feigenbaum diagram, benefit from being displayed in three dimensions. Given that we now know how to create these fractals and have the **landscape** procedure to do all the plotting, such images are easy to create. Let's take the Mandelbrot set as an example. The coloured contours around the set are used to indicate the number of iterations required to free the corresponding point from the Mandelbrot circle. The drawback of coloured contours is that it is difficult for each iteration number to have a unique colour. Plotting the set in three dimensions overcomes this problem because each iteration number can have a unique height instead – provided that the iteration ceiling does not exceed the vertical resolution of the screen, which is highly unlikely.

A program to plot the landscape would be essentially the same as the original Mandelbrot plotter given a few months ago. However, instead of scaling the calculations up to the size of the 400 x 200 screen area and plotting them, the scaling would be for the 48 x 48 *z* array and each value would simply be placed at the relevant position in the array. The **landscape** routine would then be called to plot the landscape, once all the calculations were over and the *z* array was full. The resulting program would be much faster than the two-dimensional one because at 48 x 48 the resolution is so much lower, meaning that considerably fewer calculations are required.

For the more adventurous, the **landscape** procedure is well worth further development. The addition of shaded land and blue water would transform our landscape programs from an educational exercise into something much more useful.

SOFTWARE for free

Ian Wrigley tests a mixed bag of low-cost and no-cost software – from the cream to the crud...

Here we are again, with another chunk of the best available PD and shareware for the Amiga. Once again, the bulk of the programs that we'll be looking at come from the Fred Fish collection – and once again, thanks to Anglia PD for sending me the disks. Despite the scare that happened a couple of months ago when Fred said that he was thinking of packing the whole thing in, disks are still coming in at a regular rate; let's hope that enough new people have subscribed to his service to persuade him to keep going for the foreseeable future.

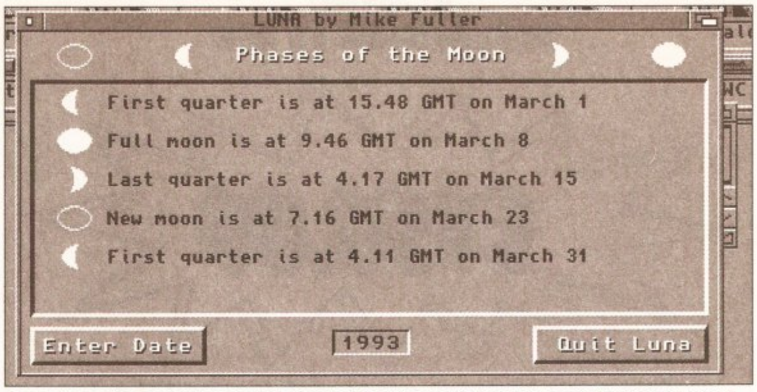
Anyway, on with the show!

LUNA
Fish disk 801

There's something about the moon that seems to attract Amiga owners. What is it about us that sparks this fascination? Hmmm... Anyway, *Luna* is a simple freeware program from Mike Fuller which will display the time and date of each phase of the moon for any month between the years 1900 and 3000. Details of any lunar eclipses in the month will also be shown. So, as the author says, "you can plan your fishing, crop planting or general new-moon mischief well ahead."

I used to be a werewolf, but I'm all right nowwwwww...

Program rating 5/10



Luna: **there's something odd about the effect of the moon on Amiga owners!**

HYPERANSI
Fish disk 803

HyperANSI is a shareware ($25) program by Mike Nelson which is designed to be "the ultimate in ANSI editors". ANSI graphics are those that you see on services such as Ceefax and also on a number of bulletin boards. They are rather crude compared to the Amiga's normal graphics capabilities, but they have the advantage that most computers can display them. And things like bulletin boards don't have much choice – an ANSI graphics screen can be transmitted in a couple of seconds, whereas anything more complex would take an unacceptably long time.

HyperANSI certainly lives up to its promise – it's a sophisticated program. There are options available to do just about anything you'd want: select a block and you can copy, paste, move, fill, delete, replace or flip it, for example; the program also copes with "transparencies", so one page can overlay another.

> **"ANSI graphics – like Ceefax's – can be transmitted in seconds."**

A special ANSI font is included with the program, along with an auto-installer in case you aren't happy copying the files yourself. The unregistered version of the program is relatively unrestricted – there's a pause of 45 seconds each time you

continued on page 107



HyperANSI **is an editor which enables you to create ANSI pictures. Forget Ceefax®! Ignore Oracle™! You can produce your own blocky graphics anytime**

BEGINNERS START HERE

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software is only one branch of this area; the other main one is shareware.

Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a 'value for money' rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a 'program rating', which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.



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***Password* is a simple and effective program to password-protect access to a hard-disk-based Amiga... as long as no-one thinks to try booting from a floppy**

continued from page 104

start it up, and the macro record and playback features are disabled. Also, any ANSI files you create will have the tag-line "HyperANSI v1.0" added to the start. Registering your copy, of course, removes these restrictions.

All in all, *HyperANSI* is a fine program, created for a relatively uncommon task. If you run a bulletin board which can display ANSI files, or if you just want to try and better the graphics that you see on Ceefax, you should check out this program.

Program rating 8/10

PASSWORD

Fish disk 804

This small, free program by Malcolm Harvey is intended to provide some form of password-protection for Amigas which boot up from a hard disk. Installation is simple: drag the main program to your **c:** directory and edit your startup-sequence so that it calls the program at a strategic point in the startup procedure. Then you must copy the two configuration files from the disk to your **s:** directory and edit them so that they are personalised for your system. One is called "names.config" and contains the names of everyone who is entitled to use the computer; "pass.config" contains all the passwords. Every time you reboot after the program is installed, a requester will appear asking for a user name and password; this will only disappear when the two things are typed in correctly – that is, when they correspond to entries in the two configuration files.

> **"Search for files not just by name, but by size, attributes, even contents."**

Like all similar programs, *Password* only controls the booting from a hard disk – you can get around the program by starting up from a boot floppy. Also, because the config files are not hidden in any way, it would be easy for a malicious person to change them. However, for controlling casual access – especially by people who have little knowledge of the Amiga, and so wouldn't know to boot up from a floppy – this program is free, easy to install and does its job perfectly well.

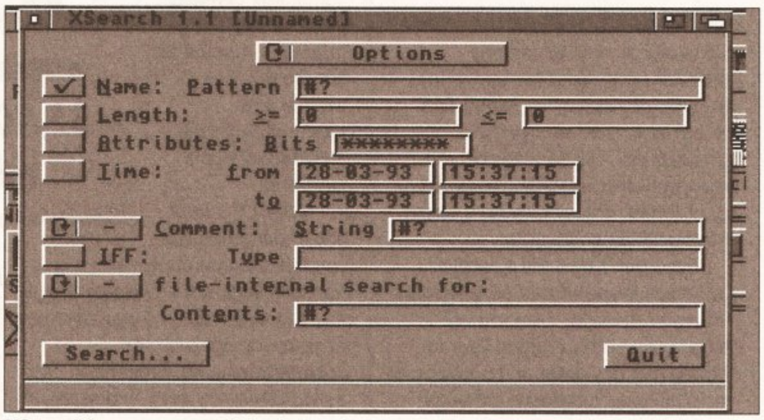
Program rating 7/10

XSEARCH

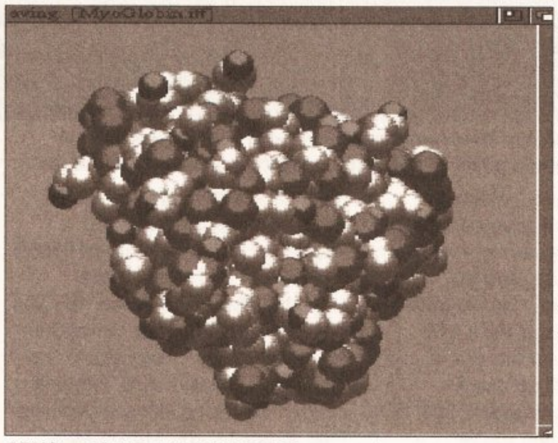
Another "file finder" utility, this program has more options than most – but, sadly, ease of use has gone out of the window because of this.

The program is freeware, and was written by 16-year-old Stefan Plchinger. It allows you to search not only for a file with a specific name, but also for one with a specific size, attributes, modification, comment, or even contents. You can also search just for specific IFF file types.

All of this would be great, if only it were a little easier to specify all of these options. Although there are two separate option screens, they are still crowded and confusing, and some of the options are downright unfriendly to set. For instance, you can search for files with a specific attribute (readable, writable, executable or whatever) set. But you must set these bits in order. So asking for files with a specification of "****RWED" is fine – you are looking for any readable, writable, executable and deletable files; the other four flags (H, S, P and A) aren't important. However, you can't ask for files that are "RWED****" – the characters aren't in the correct positions within the string. This means that if you want to search for executable files, you have to remember that the executable bit is the seventh in the string – and there's no on-line help to remind you of that vital fact.



***XSearch* is a very powerful – but unfortunately confusing – file finding utility**



***CPK* is a simple program which enables you to render "a space-filling representation of atoms in molecules" – no more playing about with plastic balls in chemistry class!**

Once you've set all your file attributes, you must decide where to look for those files. But again, bringing up the "places" window presents you with a far more confusing array of options than is really necessary. Cryptic buttons give little clue as to their meaning, and the only real way of getting the hang of the program is to spend a considerable amount of time reading the documentation and then experimenting.

All of the above is a shame, since with a more elegant user interface this program would be well worth having. Searching for a file's contents, especially, is an invaluable feature for anyone who is, say, looking for a particular word processing document in a drawer containing hundreds of cryptically-named files. (It should be said, on the other hand, that the author of *XSearch* seems unconvinced that this feature works very well – the documentation is full of disclaimers saying that it hasn't been properly implemented yet.)

Perhaps *XSearch* version 2 will cure the user interface problems. Until then, sadly, it really is too complex for most people to be bothered with – despite its utility.

Program rating 5/10

CPK

Fish disk 809

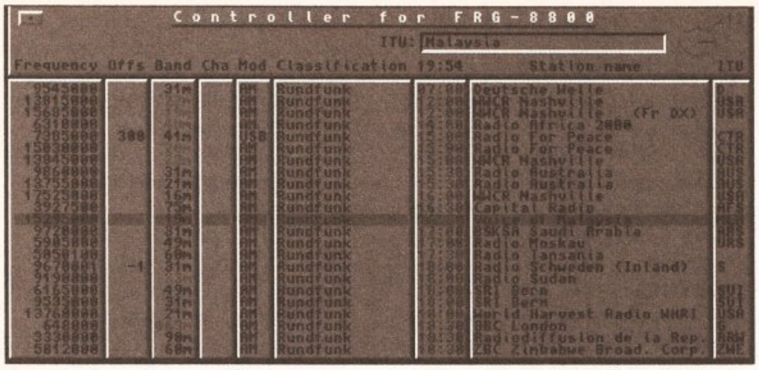
CPK, by Eric Suchanek, is a program which creates rendered illustrations of atoms in molecules; this representation is (apparently) the same type as is produced using "CPK" (Corey, Pauling, Kendrew) plastic models, which chemists will know and love – or if you used them at school, know and loathe. The advantage of this program over others is that – at least, according to the author – it correctly handles intersecting three-dimensional spheres "by using the famous Bresenham circle algorithm in 3D".

> **"You can scale the molecule image and rotate it in three dimensions."**

To use the program, you simply load the relevant molecule description file and the program

GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed, or if you've got any comments or suggestions, write to me c/o *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact me on cix as 'iwrigley', or on the internet as 'ian@vampire.demon.co.uk'.



If you happen to own a Yaesu scanner, then *Scan8800* may be just what you need. That, or a brisk walk in the fresh air once in a while!

automatically renders it. You can scale the image, and rotate it in three dimensions. Rendering took some time on my A500 Plus, but there are specific versions of the program included for 030- and 040-based Amigas, which should work much faster. The program requires at least 1Mb of RAM, and according to the documentation files "at least version 3.x of the Amiga operating system". It worked fine on my Workbench 2.04 system, though!

There are some molecule files included with the package; however, although the author says you can get the full protein data bank (.pdb) from the Brookhaven labs or from him, it is unclear whether they will be directly displayable by the program.

Still, if you're interested in displaying molecules on a computer, it may well be worth your while having a look at this program and getting in touch with Suchanek for more details.

The program is "charityware" – the author requests that you make a donation to the SIDS (Sudden Infant Death Syndrome) charity.

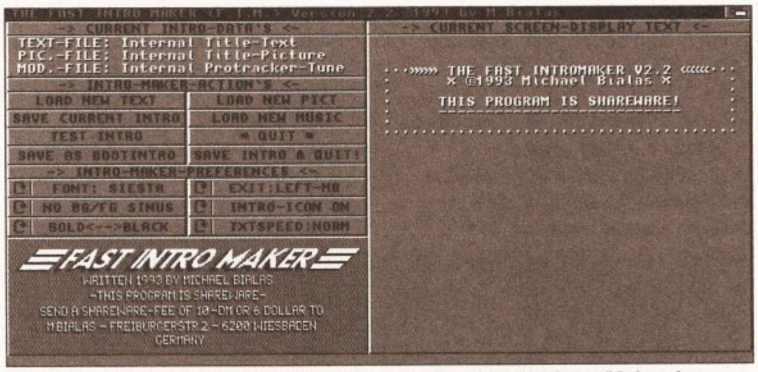
Program rating 7/10

SCAN8800

This is a program designed specifically for people who are on the lookout for the next Camillagate. It's a database for people who use radio scanners to search the airwaves for interesting (or private) broadcasts. There are thousands of completely legitimate stations on the air, often broadcasting at fairly unpredictable times – as well as things like cellular phone transmissions, police and army radios and the like. Scan8800 will store all of the interesting frequencies you find, along with times that you should check them out. Furthermore, if you've got a Yaesu FRG-8800 receiver and the Minix MIF-90 interface, the program will actually control the scanner for you. As the (German) author, Rainer Redweik, says: "Owner of the reciever now can jubilate." Indeed.

In fact, if you have the scanner and interface, the program really is quite powerful: it will even produce a chart of the S-levels received – that is, the signal strength on any particular frequency; the higher the strength, the better the signal and the easier it is to receive the transmission. The scanner can be set to switch to specific frequencies at set times, or just to scan a range of frequencies continually.

If you don't own the specific Yaesu scanner that this program was written for, though, then you will probably do better crafting your own database in any database package. I found the user interface, although reasonably attractive, very hard to get on with. Quite often I became stuck in the Edit mode – although hitting the "Help" key seemed to free me from this. The on-line help wasn't particularly informative, and the documentation is fairly hard to wade through. To be honest, I think that much of the reason for this is that Rainer has tried to fit so much functionality into the program. Still, if you own a scanner, and you're dedicated enough to work through the manual in detail, no doubt this program will prove helpful to you.



Create intros and custom boot routines quickly with *FastIntro-Maker*, by Michael Bialas, latest in a line of programs without spaces in their names

Program rating 6/10

AMIGA_E

E is, according to author Wouter van Oortmerssen, "a powerful and flexible procedural programming language," which is based on things like C and Modula-2. *Amiga_E* is the Amiga compiler for this language, which has compilation speeds of up to 35,000 lines per minute on a standard, 7MHz Amiga 500 or 500 Plus. Intuition calls are included as part of the basic language, which means that you don't have to purchase any separate libraries to start programming in earnest.

The distribution package includes the compiler itself, "modules" which allow access to Intuition, the maths libraries and so on, and some example programs – ranging from "hello world"-style basics to programs which make use of Intuition gadgets such as scroll bars and lists of text. The documentation comprises compiler information, a reference manual for the language, a tutorial and information on the included example programs.

> **"Compilation speeds of up to 35,000 lines per minute..."**

To get the best out of the language, you'll almost certainly need the official Amiga RKM manuals, but at least at the beginning you should be able to manage with the documentation as supplied – especially if you study the example programs to see how they do things.

Of course, one question which must be asked is, who on Earth needs another programming language? We've already got Pascal, C, BASIC et al – surely that's enough? Well, yes, but you may find that E suits your needs better than any of the "major" languages. And it's always interesting to compare programming languages, examining their strengths and weaknesses.

Future developments to the E language will include object-oriented programming, optional 68020, 68030 and 68881 code generation, and possibly an integrated editor and source-level debugger. Even without these enhancements, though, E is certainly worth checking out by all you code-heads.

Program rating 9/10

STARCLOCK
Fish disk 810

Any Trekkies out there? *Starclock* puts the time, date and stardate in a tiny window which sits on your menu bar. Well, actually it puts the authors' version of the stardate in the window – they didn't know how the real thing is generated, so they started with 0000.0.0 as being 1 January 1966. The right-most digit changes every 90 seconds, the next one along every 90 minutes. If you know how the "real" stardate is calculated, the authors – Michael Laurent and Volker Goerke – would love to hear from you.

The whole thing's a bit pointless, really. However, you can choose to turn off the displays of either date, time or stardate, so if you just want to see the time in your menu bar, this does the trick reasonably.

Program rating 5/10

FASTINTRO-MAKER
Fish disk 814

If you want to produce an intro to a floppy disk which loads when you boot that disk, you could do worse than check out this shareware program by Michael Bialas – the guy who wrote the *BootJob* program I raved about a couple of issues ago. *FIM* isn't incredibly sophisticated, but to just create a "welcome to this disk" message, perhaps with a background picture and some music, it's fine.

The program is easy to use: load in your text file, image and music, click a couple of buttons and you're done. The text can be created in any word processor or text editor as long as it's saved in ASCII format; the image must be a 320 x 256-pixel, eight-colour IFF; and the music must be created in *ProTracker* or any clone of that program.

After this, you can select the font in which to display the text (three are supported), whether to have foreground, background or both objects "shimmering", what the user must do to exit the intro (normally press the left mouse button), and what colour the text should be. You can then preview your masterpiece, and finally save it either as an executable file or as a bootblock to a floppy disk.

That's it, really. Short and sweet – but expect to see plenty of PD companies and the like taking advantage of it in the near future.

Oh, there's also an upgraded version of Michael's *BootJob* program on the same Fish disk, which makes it doubly worth getting.

Program rating 8/10

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TREEGROW

Fish disk 814

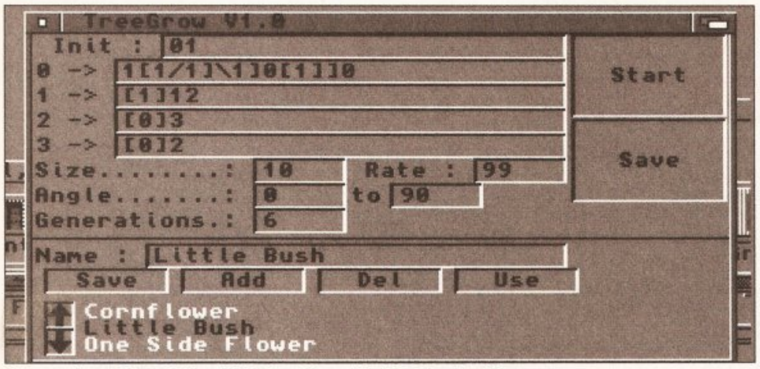
TreeGrow, by Benjamin Stegemann, is a neat little program that produces "quasi-fractal trees". They're quasi-fractal because only a couple of iterations are performed, so they are not real fractals. Still, some interesting effects can be produced, and the whole thing is tarted up because the program actually draws "trees", or plants, with flowers, rather than the normal, rather boring skeletal structures that the majority of similar programs produce.

The idea is that each iteration is performed on strings of characters. These characters have different meanings – for instance, "0" means "draw a line straight forward", "2" means "draw a line straight forward with a red flower at the end of the line", "[" means "turn left or right and begin a new branch" – and so on. You specify the initialisation string, and also what each of the basic four drawing characters should be replaced with at the beginning of the next iteration.

It all sounds far more confusing than it actually is – play around with the program for a couple of minutes and you'll get the hang of things. Of course, many of your tries will end up just producing a mess, but some can create very attractive patterns – and at the same time, you're learning about the power of fractals.

For simplicity and interest, this program earns a...

Program rating 9/10



Learn about fractals with *TreeGrow*, by Benjamin Stegemann

INSPIRE DEMO

Fish disk 815

Inspire is a new text editor by Josh Van Abrahams, and requires AmigaDOS 2.0 or above to work. It's very easy to use and has enough good features to be worth checking out. The shareware fee is $25 – the demo version has the Save and Print features disabled.

Because the program takes advantage of AmigaDOS 2.0's features, you can select any supported screen resolution and font to work in. The program supports multiple open files, and, because it has a clipboard device, you can copy text between two different windows. Copy, Paste and Cut are all supported, and a block of text is selected in the easiest way possible: by clicking and dragging with the mouse, just as is the case with Macintosh and Windows programs – but which, for some reason, isn't so common on the Amiga.

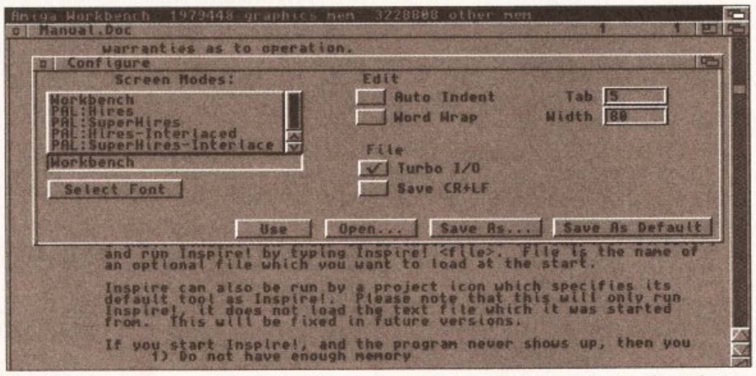
Although you can use the program as a word processor – it supports word wrapping and centring text – it also has some features that come into their own when the editor is used by programmers. The "Find Match Bracket" command will show you where the corresponding close bracket is to the open bracket that you've selected – invaluable when you're trying to work out why a complex function isn't producing the right values. And talking of such things, the "Procedures" command will produce a list of all procedures that you've defined, if you're writing a C program. Click on a procedure name from the resulting window, and the cursor jumps to its definition in the text. Of course, auto-indenting is an option, and you can define the size of tab-stops as well.

"You can use it as a WP but it comes into its own in programming."

The program supports ARexx, and even has five "bookmarks", so that you can jump to and from bits of your program or document that you need to make constant reference to. When you come to save your work, you can specify whether or not it should be in IBM format (carriage return and line feed at the end of each line) or not.

It's a shame that Josh has decided to restrict this demo version, but it's well worth checking out anyway – and I suspect that it will rapidly become popular.

Program rating 9/10



The *Inspire* demo on Fish disk 815 – a powerful, easy-to-use text editor that takes advantage of AmigaDOS 2.0 features

INSTALL 1.2

Fish disk 817

David Kinder, like many people, ponders on Commodore's wisdom in some areas: "Considering that Commodore-Amiga have written a friendly icon-driven user interface, it seems odd that they wrote most of the system software to be CLI only." With that in mind, he has written a simple, Workbench-based Install utility which enables you to Install floppy disks via a point-and-click interface, and which should work on any version of AmigaDOS from 1.3 upwards.

"Enables you to install floppy disks via a point-and-click interface."

When it's run, you're presented with a tiny window with buttons for each of the floppy disk drives attached to your system – any you don't have, such as **DF2:** and **DF3:**, are greyed out. You select the kind of bootblock you want to install from a menu – OFS 1.3, OFS 2.0 or FFS 2.0 – and then just click on the button for the required drive. The type of bootblock is automatically set to the correct one for your system when you start the program, so normally you won't even have to bother with that option.

It's nice to see programmers making the Amiga's operating system more friendly, rather than adding hundreds of esoteric new commands that virtually no-one will use. This program is free, and will make life far simpler for those people who don't want to delve around in the CLI every time they want to create a new floppy disk. Recommended.

Program rating 10/10

DATABENCH

Fish disk 820

For some reason, databases seem to be popular programming projects with Amiga PD and shareware authors. Perhaps it's because a very basic program can be put together fairly easily – or perhaps these people believe that we really do want to store our video tapes or whatever by serial number, and look them up on computer when we want to watch a specific tape. If so, they're sadly mistaken.

However, every so often a database appears that is something a bit special and is worth checking out. *Databench* is just such a program. For a start, it's relational, to an extent – which means that you can look up data from other files and update any data in your open file that depends on values in those other files. It's not fully relational, but it will do until something better comes along.

The version of the program on Fish disk 820 is a demo – printing is disabled (as is "printing" to a file), and you can't use the relational features. The author, Eric Hambuch, is represented by a company called APC&TCP Vertrieb; he gets half of each DM50 (plus postage, or US$50 including postage). This is an odd arrangement – it sounds less like shareware and more like a commercial enterprise to me. However, I guess it's a more convenient way of processing registrations for some programmers.

Although the demo is limited, there is still plenty to be getting on with. Major features include:

- Up to 64 fields per record, with seven different field types (including string, calculation, boolean and date).
- An ARexx interface, and over 25 ARexx commands (although these are not documented in the file that comes with the demo version).
- Fast search and sort – the author claims that a 1,000 record sort can be performed in one second, as can a search on the same sized database.

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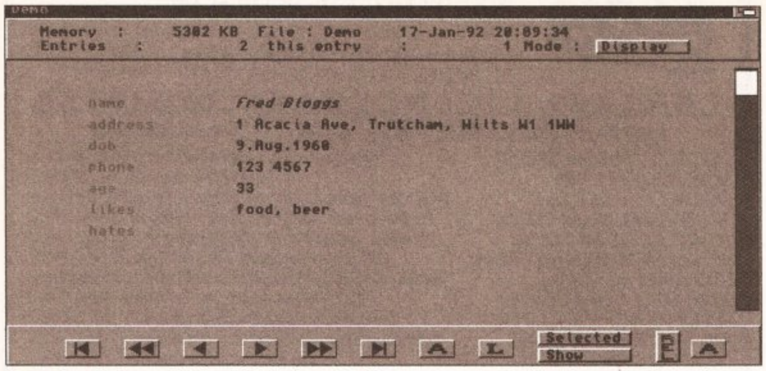
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***Databench* is a relational database with many powerful features; a demo is on Fish disk 820 – worth trying before you splash out on a full-price program**

- Several bundled utilities are included with the registered version, including a file displayer and text editor.
- Data import and export features.
- Label printing.
- Up to five files in memory at the same time.
- Support for displaying IFFs.

The documentation provided with the demo version is somewhat limited – it consists mainly of a rough features list and several adverts exhorting you to buy the full program. However, it's not too hard to work out what you're doing just by experimenting, and judging by the time I spent playing with the program, it really is very powerful indeed. Of course, I do have some reservations: for example, field

> **"Every so often a database appears that is something a bit special..."**

layout can only be done through a requester which asks you where on the screen, numerically, each field should be – it would be far easier to drag fields to the correct place. Still, there is support for things like italicised text, so at least you can get things looking fairly attractive quite easily.

Numerous shareware and PD databases are available on the Amiga, and *Databench* needs to be something special to justify its rather high price. It does look, though, like it might just be worth the money. You should certainly check out this demo before you go out and buy a full-priced program.

Program rating 8/10

QUICKFILE

Fish disk 820

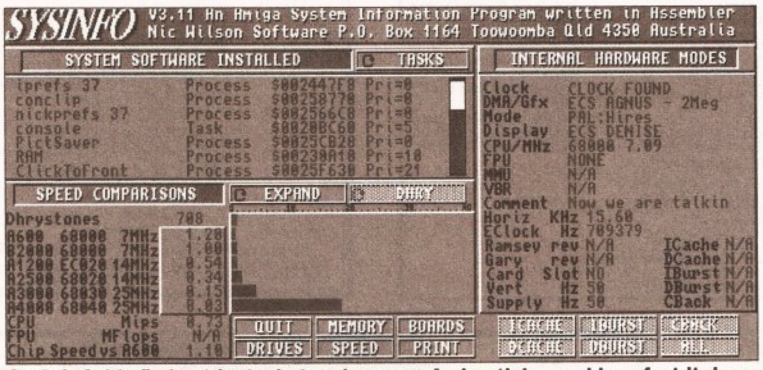
And yes, another one! Unbelievably, on the same Fish disk is *QuickFile*, another database. This one, though, doesn't claim to be quite as sophisticated as *Databench* – instead, it styles itself "a flexibly, fast and easy-to-use flat file database". Unfortunately, it doesn't quite live up to this promise. Indeed, it doesn't seem to work very well at all. Although double-clicking on either of the two pre-defined sample databases loaded the program perfectly well, trying to define my own crashed the computer every time. I don't want to go into a major rant here, but I really don't understand why people release software which doesn't work properly. Although the documentation says under the "Bugs" heading "none known", it certainly wasn't happy on my Amiga, which has nothing out of the ordinary installed – perhaps a mite more RAM than some people, and more libraries than you can shake a stick at, but nothing that should cause a fatal, cursor-freezing crash if a program is at all well-behaved. Maybe I could have found the cure for the problem if I'd persevered for a few more hours, but to be quite honest I – and I'm sure you, too – have better things to do.

Program rating 0/10

SYSINFO 3.11

SysInfo is an old favourite of Amiga chipheads. I looked at an old version of the program some time ago, but version 3.11 is a considerable improvement – author Nic Wilson has now made the whole thing look incredibly professional, and has added some extra features.

The basic *raison d'etre* of *SysInfo* is to tell you all about your Amiga – what's running, what extras you have plugged in and how fast the whole thing is going. Category areas include speed, memory, add-in boards and disk drives. Also shown are things like whether you have a clock on board, what display mode you're running in, the chipset used for display, what CPU, FPU (floating point unit) and MMU (memory management unit) you have, what libraries are installed, what resources are loaded, what tasks are currently running and so on and so on – basically, everything that's going on inside your Amiga!



***SysInfo* 3.11: find out just what makes your Amiga tick – and how fast it does it, even in comparison to higher-spec Amigas you can only lust after...**

If you select the speed tests, a small graph of your machine's performance appears, rating it against other member of the Amiga family. It's a sign of the times that neither the A500 nor A500 Plus is included on the graph – instead, your Amiga is compared against the A600, B2000, A1200, A2500, A3000 and A4000. Still, it's good to know that – at least according to *SysInfo* – my trusty A500 Plus runs slightly faster than a standard A600.

SysInfo isn't a program that you'll find yourself using a great deal,

> **"You should have an up-to-date virus checker running all the time."**

but it would really show its usefulness if you ever have to phone up a technical support line for a product. It's nice to be able to answer questions like "How much Chip RAM is in your machine?" or "Exactly what version of *diskfont* do you have installed?" without ending up whimpering pitifully.

Nic Wilson asks that you donate US$20 if you find this program useful. To be honest, I don't think I'd want to use it enough to justify that sort of figure to myself, but I'm sure that there are plenty of people out there who will. You can even pay with your credit card, if you want!

Program rating 8/10

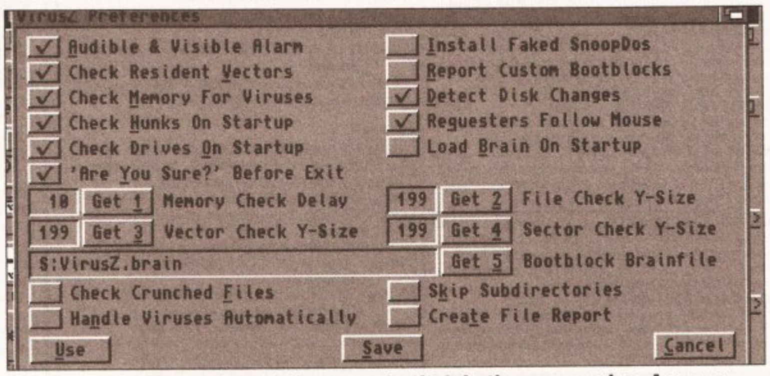
VIRUSZ

Fish disk 820

This is another update, but it can't be stressed enough that you should have an up-to-date virus checker running all the time – especially if you're in the habit of checking out PD software, since although all decent PD houses check their disks for viruses, it's always possible that one will slip through.

VirusZ sits in the background and scans every disk that you insert for non-standard bootblocks or bootblock viruses. If it finds something that it doesn't recognise, you have the option to enter the "bootblock lab", where you can inspect the contents of the bootblock. It also performs a memory check when it's first started up, to make sure that you don't have any unwanted intruders, and will remove any viruses that it finds. The check is repeated regularly – every ten seconds, by default – so with luck any virus infection will be caught before it has a chance to do anything nasty to your files.

VirusZ is now shareware – the author requests a DM10 donation, although he will no longer be sending out updates to people who register,



Coughs and sneezes spread diseases. A stitch in time saves nine. A penny saved is a penny earned. Oh, and you can also stamp out viruses with *VirusZ*

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❏ ^ + 1081 UTLTIMATE STAR TREK (2) Game by Tobias Richter. Now in English
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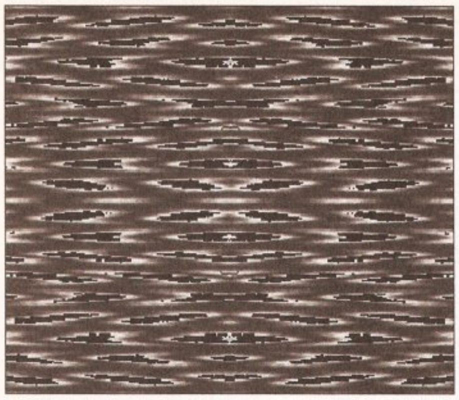
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Funky, man! Mess with your mind (and your eyes) using *Cyclops 1.0*

since he says this has cost him too much money in the past. This is understandable, since the program is updated so regularly and you can get it from a wide range of sources.

If you only install one piece of PD or shareware on your Amiga, it should be an anti-virus program – and *VirusZ* is one of the best. Get it!

Program rating 10/10

CYCLOPS PICTURE MAKER

Anglia PD disk U4041

Cyclops, by a group of people who call themselves "Shadow", is essentially a pattern generator. You set various cryptically-named parameters such as "Phase Y1", "Skip Y2" and "Add to X", pick the colours that you want your pattern to appear in and hit Draw. Once the pattern has appeared, you can cycle through colours for a particularly psychedelic effect, and save any pleasing pictures as IFFs or RAW data.

That's about it, really. As pattern generators go, it goes; and the results have all the interest and usefulness of any computer-generated patterns from any other such program. Come back from a rave, stick the disk in and re-live that Vicks Vapo-Rub experience.

Program rating 6/10 AS

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There is a growing number of bulletin boards with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses below. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between the companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and there are totally incompetent (dis)organisations which charge more than twice that.

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IP11 7HU
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Blitterchips
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Primrose Street
Keighley
BD21 4NN
☎ 0535 667469

Crazy Joe's
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Rotherham
South Yorks
S65 1BL
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36 Bodelwyddan Ave
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Clwyd LL29 9NP
☎ 0492 515981

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Beech Hill
Wigan WN6 7SG
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Essex Computer Systems
118 Middle Crockerford
Basildon
Essex
SS16 4JA
☎ 0268 553963

George Thompson Services
Cucumber Hall Farm
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Herts
AL9 6JB
☎ 0707 664 654

ICPUG
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N3 2UT
☎ 081-346 0050

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1 Chain Lane
Newport
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1 Bryant Ave
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☎ 0702 466933

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Berkshire RG3 5AN
☎ 0734 452416

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Blackpool FY5 1SB
☎ 0253 22296

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160 Hollow Way
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☎ 0865 774472

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West Yorks WF1 1XX
☎ 0924 366982

Software Expressions
Unit 4
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Southville
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☎ 0272 639593

Softville
Unit 5, Stratfield Park
Elettra Avenue
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☎ 0705 266509

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If a library is named in a review, this means that that library provided us with the disk reviewed. Given that PD can be freely copied, the same program may well be available legitimately from several libraries.

• If you run a PD library not listed here and wish to be included, or if you weant to amend any information given, send full details and a copy of your latest catalogue to:
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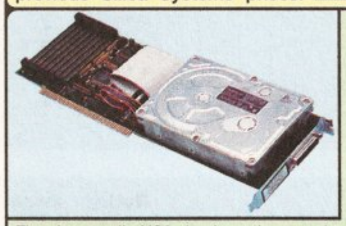
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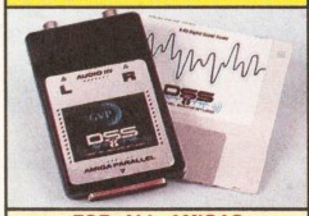
PLUG-IN HARD DRIVE OPTIONS

MODEL	42Mb	80Mb	120Mb	213Mb
HD8+ HARD DRIVE	£299 INC VAT Ref: HAR 0840	£399 INC VAT Ref: HAR 0888	£499 INC VAT Ref: HAR 0922	£599 INC VAT Ref: HAR 0933

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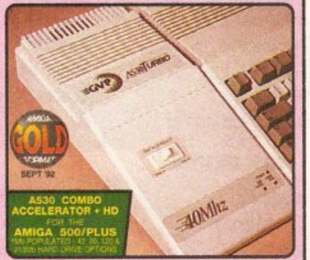
Ref: VID 2500 **£349**

HD8+ HARD DRIVE / A530 HD & ACCELERATOR	HD8+	A530
HARD DRIVE		
SCSI HARD DRIVE 40, 80, 120 & 213Mb VERSIONS	●	●
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"... the build quality is excellent ... in terms of performance, their gear is the best ... their equipment is worth every penny!. 94% AMIGA FORMAT 9/92

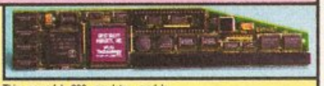
PLUG-IN HARD DRIVE & ACCELERATOR OPTIONS

MODEL	42Mb	80Mb	120Mb	213Mb
A530 COMBO HARD DRIVE & ACCELERATOR	£699 INC VAT Ref: HAR 0962	£799 INC VAT Ref: HAR 0968	£899 INC VAT Ref: HAR 0974	£999 INC VAT Ref: HAR 0983

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PLUG-IN OPTION FOR HD8+ & A530

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PRODUCT LOCATOR

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Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. It may not include each and every product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest assured that all the major brands are here. The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it accordingly. This month space is at a premium, so we're bringing you a selection of the huge range of software for the Amiga owner. Music and educational programs are being held over until space is available.

PAINT PROGRAMS

Product	Supplier	Price	Screen Modes	Max Colours	Overscan	Animation	Rating	Issue
Deluxe Paint 3	Electronic Arts	£70	L/LI/M/H	64	Yes	Yes	*****	2
Deluxe Paint 4	Electronic Arts	£90	L/LI/M/H	4096	Yes	Yes	*****	10
Deluxe PhotoLab	Electronic Arts	£130	L/LI/M/H	4096	Yes	No	***	2
DigiPaint 3	Silica Systems	£80	L/LI	4096	Yes	No	****	2
The Graphics Studio	Accolade	£50	L/M	32	No	No	***	2
MyPaint	HB Marketing	£20	L	12	No	No	***	2
Photon Paint 2	MicroIllusions	£90	L/LI	4096	Yes	Yes	*****	2
SpectraColour	HB Marketing	£60	L/LI	4096	Yes	Yes	***	5

L-Low Res, LI-Low Res Interlaced, M-Medium, H-High Res

ANIMATION SOFTWARE

Product	Supplier	Price	ANIM Compat	Onion Skin	X-Sheet	Sound	Rating	Issue
Disney Animation Studio	Silica	£80	Yes	Yes	Yes	Yes	****	1
Fantavision	HB Marketing	£50	No	No	No	Yes	****	14,23
MovieSetter	Silica	£80	No	No	No	Yes	****	14,23
Take-2	Rombo	£95	No	No	Yes	Yes	****	14

SOLID MODELLING/RAY TRACING

Product	Supplier	Price	Ray Tracing	24-bit	Animation	Bump Maps	Textures	Rating	Issue
Aladdin 4D	MicroPace	£260	No	Yes	Yes	No	Yes	***	25
Draw 4D	Surface UK	£150	No	No	Yes	No	Yes	***	7
Expert 4D Junior	Genisoft	£39.95	Yes	No	No	No	Yes	****	21
Imagine	Silica	£235	Yes	Yes	Yes	No	Yes	*****	4,7,20
Imagine 2	Computech	£270	Yes	Yes	Yes	Yes	Yes	****	14
RayDance	Radiance	£100	Yes	Yes	No	Yes	Yes	***	14
Real 3D 1.4	Alternative Image	£120	Yes	Yes	Yes	Yes	Yes	*****	4,7,20
Sculpt 4D	Alternative Image	£400	Yes	Yes	Yes	No	Yes	*****	7
3D professional	Marcam	£260	Yes	Yes	Yes	No	Yes	***	7

MISC GRAPHICS

Product	Supplier	Price	Type		Rating	Issue
CineMorph	Silica	£99.95	Morphing program	****	23	
Genesis	Microillusions	£50	Fractal Landscapes		****	11
Morph Plus	MicoPace	£180	Morphing program	****	23	
VistaPro	HB Marketing	£100	Fractal Landscapes		*****	7

IMAGE PROCESSORS

Product	Supplier	Price	24-bit	Max Colours	File Formats	Composition	Colour Control	Rating	Issue
Art Department	Silica	£100	Yes	16.7 m	Many	No	Yes	****	–
Art Department Pro	Silica	£200	Yes	16.7 m	Many	Yes	Yes	*****	10
Butcher 2	HB Marketing	£50	No	4096	IFF	No	Yes	***	–
ImageMaster	Amiga Ctr Scot.	£175	Yes	16.7m	IFF	Yes	Yes	*****	18

PAGE LAYOUT SYSTEMS

Product	Supplier	Price	Outline Fonts	Pantone	Postscript	24-bit Col	Colour Sep	Rating	Issue
CityDesk	Precision	£130	No	No	Yes	No	No	**	–
PageSetter 2	Silica	£100	Yes	No	No	No	No	***	–
PageStream 2.2	Silica	£200	Yes	No	Yes	Yes	Yes	***	2,3
ProPage 2.1	Silica	£250	Yes	Yes	Yes	Yes	Yes	*****	1,17
ProPage 3.0	Silica	£250	Yes	Yes	Yes	Yes	Yes	*****	17
Saxon Publisher	Surface UK	£250	Yes	No	Yes	Yes	Yes	***	17
Shakespeare	Cloudhall	£100	No	No	Yes	No	Yes	***	–

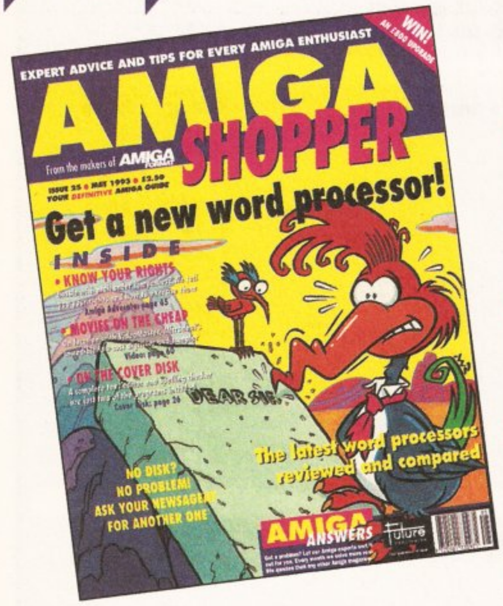
STRUCTURED DRAWING PROGRAMS

Product	Supplier	Price	Bezier Curves	Postscript	Outline Fonts	EPS compat	Rating	Issue
Art Expression	Silica	£150	Yes	Yes	Yes	Yes	****	24
DesignWorks	Silica	£100	Yes	Yes	Yes	No	**	–
Expert Draw	HB Marketing	£70	Yes	Yes	Yes	Yes	***	14
ProDraw 2.1	Silica	£132	Yes	Yes	Yes	Yes	*****	–
ProDraw 3.0	Silica	£132	Yes	Yes	Yes	Yes	****	20

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PRODUCT LOCATOR

CAD PACKAGES

Product	Supplier	Price	DXF Compat	No. Of layers	Vector Fonts	PostScript	Rating	Issue
DynaCADD	ExpressWorks	£650	Yes	256	Yes	Yes	****	3
UltraDesign	Marcam	£200	Yes	128	Yes	Yes	***	–
X-CAD 2000	Digital Multimedia	£129	Yes	255	Yes	With util included	****	–
X-CAD 3000	Digital MultiMedia	£300	Yes	255	Yes	With util included	*****	–

WORD PROCESSORS

Product	Supplier	Price	Spell Checker	Thesaurus	Picture Import	Rating	Issue
Excellence 3	HB Marketing	£79.95	Yes	Yes	Yes	****	25
Final Copy 2	Gordon Harwood	£100	Yes	Yes	Yes	****	25
KindWords 2	HB Marketing	£50	Yes	No	Yes	**	6,9
KindWords 3.0	Silica	£80	Yes	Yes	Yes	**	25
Mini Office 2	Europress	£69	Yes	NO	NO	****	17
Pen Pal	Harwoods	£80	Yes	No	Yes	****	6,9,25
Personal Write	MicroPace	£30	No	No	No	*	25
ProWrite 3.2	Silica	£143	Yes	Yes	Yes	***	12
Protext 5.5	Arnor	£150	Yes	Yes	No	*****	6,9,25
Scribble!	HB Marketing	£30	Yes	No	No	***	6,9,25
Transwrite	HB Marketing	£40	Yes	No	No	***	6,9,25
Word Perfect	Sentinel	£230	Yes	Yes	No	***	–
Wordworth	Digita	£130	Yes	Yes	Yes	****	4,6,9,25
Wordworth 2	Digita	£129.95	Yes	Yes	Yes	****	21,25

DATABASES

Product	Supplier	Price	Type	Programmable	dBASE Compatible?	Rating	Issue
Infofile	HB Marketing	£50	Card Index	No	No	***	9
Mini Office 2	Europress	£69	Card Index	No	NO	***	17
Organize 2	HB Marketing	£62	Relational	No	Yes	***	–
ProData 1.2	Arnor	£100	Card Index	No	Yes	****	9
SuperBase	Precision	£30	Relational	No	Yes	****	9
SuperBase 2	Precision	£100	Relational	No	Yes	****	9,12
SuperBase Pro 4	Precision	£400	Relational	Yes	Yes	*****	4,9

SPREADSHEETS

Product	Supplier	Price	Lotus Compatibility	Graphs	Rating	Issue
Advantage	Silica	£100	Yes	Yes	****	1,9
Analyze!	Precision	£50	Yes	Yes	***	9
Analyze 2	HB Marketing	£50	Yes	Yes	***	–
DGCalc	Digita	£40	No	No	**	–
K-Spread 3	Kuma	£70	Yes	Yes	***	9
K-Spread 4	Kuma	£100	Yes	Yes	****	9
LP Calc	HB Marketing	£50	No	NO	*	19
MaxiPlan 4	HB Marketing	£130	Yes	Yes	***	18
Maxiplan 500	HB Marketing	£80	Yes	Yes	***	9
Mini Office 2	Europress	£69	No	Yes	***	17
ProCalc	Silica	£150	Yes	Yes	*****	–

MULTIMEDIA

Product	Supplier	Price	Interactive	External Drivers	ARexx	Rating	Issue
AmigaVision	Commodore	£80	Yes	Yes	Yes	****	–
CanDo 1.5	Checkmate Digital	£130	Yes	No	Yes	*****	–
HyperBook	Silica	£100	Yes	No	Yes	****	6
Presentation Master	HB Marketing	£350	Yes	No	No	****	9
Viva!	MicroDeal	£200	Yes	Yes	No	**	–

VIDEO TITLERS

Product	Supplier	Price	Overscan	Transitions	Amiga Fonts	Horiz Crawl	Rating	Issue
Alternative Scroller	Alternative Image	£50	Yes	No	No	Yes	***	–
Broadcast Titler 2	HB Marketing	£234	Yes	Yes	No	Yes	****	2
Home Titler	HB Marketing	£40	Yes	No	No	Yes	***	9
ProTitler	HB Marketing	£100	Yes	Yes	Yes	Yes	***	9
Scala 1.1	Silica	£250	Yes	Yes	Yes	No	*****	2
Scala 500	Silica	£100	Yes	Yes	Yes	No	****	–
Scala MM200	Scala UK	£395	Yes	Yes	Yes	Yes	*****	21
Video Caption Designer	Maze	£200	Yes	No	Yes	Yes	***	3
Video Ease	Interactive Tchnlgy	£40	Yes	Yes	Yes	Yes	**	11

PRODUCT LOCATOR

PRODUCTS

DESKTOP VIDEO UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Adorage	MicroPace	£79.95	Video Effects System	****	24
AntiA	Zen	£40	Font Enhancer	****	8
BT2 Font Enhancer	HB Marketing	£130	Font Enhancer	***	8
Deluxe Video 3	Electronic Arts	£100	Presentation System	****	–
Elan Performer 2	Silica	£180	Presentation System	****	11
ShowMaker	Silica	£250	Presentation System	***	10

PROGRAMMING LANGUAGES

Product	Supplier	Price	Language	Compiler	Rating	Issue
AMOS	Europress	£50	BASIC	Separate	*****	3,9
AMOS Compiler	Europress	£30	Compiler	Yes	****	5,9
AMOS Professional	Europress	£69.95	BASIC	Separate	*****	20
AMOS Tome	Deja Vu	£30	BASIC Extension	–	****	11
AMOS 3D	Europress	£30	BASIC Extension	–	*****	5,7
Easy AMOS	Europress	£35	BASIC	No	*****	12
Aegis Visionary	Precision	£59	Adventure	Yes	***	17
ArgAsm	HB Marketing	£60	Assembly	–	***	9
Aztec C	Precision	£130	C	Yes	****	9
Blitz	Siren Software	£70	BASIC	Yes	***	3,9
Devpac 3	HiSoft	£70	Assembly	–	*****	10,12
GFA BASIC 3.5	GFA Data Media	£50	BASIC	Separate	****	3,9
GFA Compiler	GFA Data Media	£30	Compiler	–	****	3,9
HiSoft BASIC	HiSoft	£50	BASIC	Yes	****	9
HiSpeed Pascal	HiSoft	£100	Pascal	Yes	****	19
Lattice C 5	HiSoft	£230	C	Yes	*****	3,9
M2 Amiga	Real Time	£125	Modula-2	Yes	****	7,9
RQ Forth	HB Marketing	£80	Forth	Yes	****	9

UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Ami-Back 1.4	Omega Projects	£50	Hard Disk Backup	*****	9
Director 2	Alternative Image	£100	Video Presentation scripting language	***	19
Directory Opus	Checkmate Digital	£40	Directory Utility	*****	–
Essence	Apex Software	£80	Algorithmic textures for Imagine 2	****	20
Flow 3.0	Silica	£80	Ideas Processor	***	10
GB Route Plus	Complex Computers	£80	Journey Planner	*****	10
GB Route Plus Edit	Complex Computers	£30	Editor For GBRoute	****	10
Hit Kit!	Gajits	£25	Sequences for Sequencer One	***	16
Home Office 2	Gold Disk	£99	Integrated applications software	*****	20
HotLinks	Silica	£70	Add on for PageStream 2.2	**	16
MapMaster	Alternative Image	£54	Image Mapping package	****	14
Personal Fonts Maker	HB Marketing	£70	Bitmap Font Editor	***	7
PowerWaves 3.1	Database	£17.95	Create wave-based 3D objects	****	21
QuarterBack	HB Marketing	£50	Hard Disk Backup	****	5
Real Things	Living Data	£29.95	Animated animal brushes for DPaint	****	20
Reverser	Alternative Image	£10	Animation Utility	****	17
SaxonScript	Surface UK	£100	Postscript interpreter	***	15
Shades	Meridian Software	£60	Gradient fills for PageStream	**	16
Smooth Talker	Zen Computers	£140	Video Prompting package	****	16
SurfaceMaster	Alternative Image	£28	Add on for Imagine	****	14
Touch Typist	Sector Software	£14	Teach yourself touch typing	****	15
Turbo Print Pro	HB Marketing	£50	Enhanced Printing	****	11,12

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ESP Software	0702 600557
Europress	051 357 1275
Evenlode SoundWorks	0993 898484
ExpressWorks	0252 726255
Gajits Music Software	061 236 2515
GeniSoft	0753 686000
GFA Data Media	0734 794941
Harwoods	0773 836781
HB Marketing	0753 686000
HiSoft	0525 718181
Interactive Technology	0423 501321
Kosmos	0525 53942
Kuma	0734 844335
Lander Software	041 357 1659
Marcam Ltd	071 258 3454
MCM	081 963 0663
Meridian	0533 896743
Merit Software	0101 214 385 2353
MicroIllusions	0480 496497
Omega Projects	0942 682206
Prisma Software	0244 326244
Radiance	0101 408 270 7420
Rainbow	0392 77369
Real Time Associates	081 656 7333
Rombo Productions	0506 466601
Scetlander	041 357 1659
School Software	010 353 61 45399
Sentinel	0932 231164
Silica	081 309 1111
Siren Software	061 724 7572
SMG	0274 562999
Softstuff	0732 351234
Surface UK	081 566 6677
Triple 'R' Software	0742 780370
Zone	081 7666564

BUYING ADVICE FOR SHOPPERS

Whether you're buying over the phone or at a local store, here's our advice on getting what you want

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
- The goods must be 'as described'.
- The goods must be fit for the purpose for which they were sold.

If they fail to satisfy any or all of the criteria, then you are then entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit-making operations. AS

A CHECKLIST FOR MAIL ORDER BUYING

- **Before you send any money, ring the supplier to confirm that the item you want is in stock and when the delivery is likely to be made. Enquire about returning unwanted goods and the supplier's refund policy. Find out about hidden extras like postage and packing charges, and whether the prices quoted include VAT.**
- **Beware of companies that do not include an address in their adverts.**
- **If ordering goods of more than £100 in value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.**
- **Always buy from the most recent issue of *Amiga Shopper*.**
- **When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.**
- **If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory).**
- **Always keep records of correspondence with any mail order company you deal with and also make a note of where and when you saw the product advertised. False or misleading advertising is an offence, and suppliers must stick to what they've said in adverts.**

AD INDEX

HE WORLD'S BEST-SELLING AMIGA M NE

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AMIGA FORMAT

UE 47 ■ JUNE 1993 ■ £3.25

The best Amiga ever!

e 4000/030 brings Amiga users
etter graphics – The AGA chip set
ore power – Motorola 68030 CPU
reater expandability – Zorro 3 slots
US: We're giving one away!



Discover the World of Commodore

What's the best Italian paint package?
Which country has most Amiga users?
Where are new Amigas developed?
Our seven page international guide reveals all!

Floppy Drives
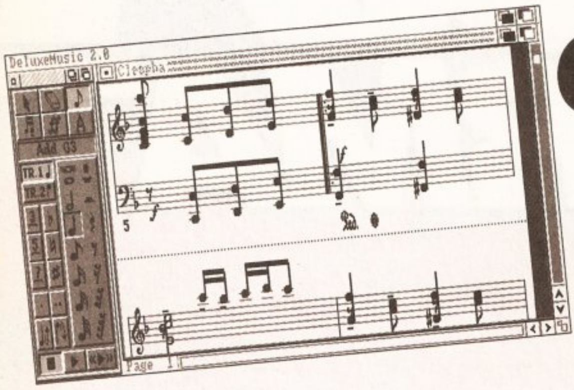
You shouldn't be without one, but which one?
Find out in our complete round-up

REVIEWED: SuperFrog, The Ancient Art of War in the Skies, Sink or Swim, Whale's Voyage Retina, Europress' ADI Junior, Rave, Adorage, Order, G-Lock

Future Publishing
Your guarantee of value

WIN • WIN • WIN • WIN • WIN • WIN • WIN • WIN

Budding composers – check this out



Anyone who's serious about making music on the Amiga will have heard of Electronic Arts' Deluxe Music package – and we've got five copies of the new version that must be won.

Those clever people from Electronic Arts in sunny California have just released a new version of their highly successful sequencer and score-writer package *Deluxe Music Construction Kit.*

What's even better is that they're generous as well as clever – this month they have teamed up with *Amiga Shopper* to give five budding musicians the chance to get their hands on a copy of this £69.99 package for free.

Deluxe Music is a great tool for composing music – it's simple enough for a beginner to feel confident with, yet has all the powerful features that a professional musician expects. Whether you want to compose, publish or perform music, *Deluxe Music Construction Kit* is the solution, with full four-voice sound, 16-channel MIDI Out and support for 48 staves.

Entering couldn't be simpler – all you have to do is come up with the answers to the three questions in the box at the right. Send your solution on a postcard (or the back of a sealed envelope) and include your name, address, postcode and details of your computer and any peripherals. The address is:

Loony Tunes
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

The closing date is Thursday 10 June. Winners will be drawn from a cardboard box after that date. Only one entry per household, and please state if you would prefer not to have your name included on a mailing list.

THE CHALLENGE • THE CHALLENGE

1. Who wrote the 1812 Overture?
(a) Beethoven
(b) Tchaikovsky
(c) Mozart

2. Electronic Arts' UK office is in which county?
(a) Berkshire
(b) Buckinghamshire
(c) Bedfordshire

3. The score shown in the screenshot on this page is titled:
(a) Baricades Misterieuses
(b) Cleopha
(c) Passacaglia

THE CHAMPIONS!

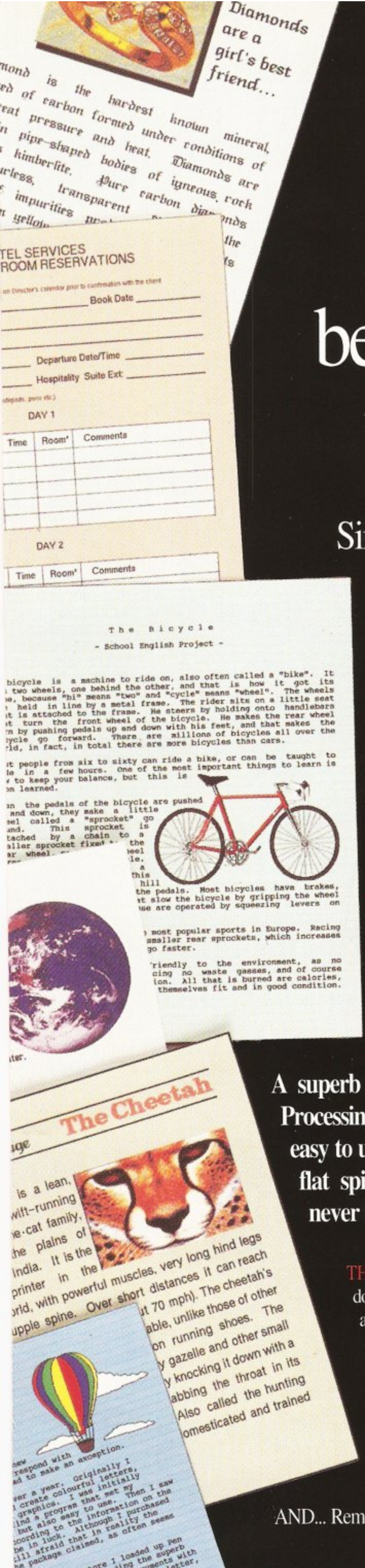
In *Amiga Shopper* 24 you had the chance to win one of 15 copies of ADI educational programs, courtesy of Europress Software. The 15 winners are: R Klasir, Portugal; W Lambert, Newton of Stracathro; S Pryor, St Neots; S Veitch, Seaham; B Pearce, Thornbury; S Bhjani, Gosforth; L Ashworth, Rochdale; J Mackey, Woking; H Stevenson; Deanfield; R Corbett, Bristol; E Perrett, Leuchars; P Jenkinson, Altringham; M Ritchie, Hartlepool; C Harrison, Mickleover; T Edwards, Ellesmere Port. Well done, all of you!

IN NEXT MONTH'S FACT-PACKED ISSUE

- It's a hardware extravaganza! We show you how to upgrade your old A500 to keep up with those new-fangled A1200 jobbies, including information on Agnus and Denise upgrades, extra Chip RAM, and how to install the latest version of Kickstart and Workbench.
- Pump up your processor power with the aid of our accelerator round-up. We look at all the latest and tell you which is best for your set-up.
- Readers' Listings – make money from your programs!

Plus: regular columns on Amiga Answers, public domain, video, AmigaDOS, desktop publishing, programming, education, music, chaos, comms and much more

>>>> On sale Tuesday 1 June >>>>

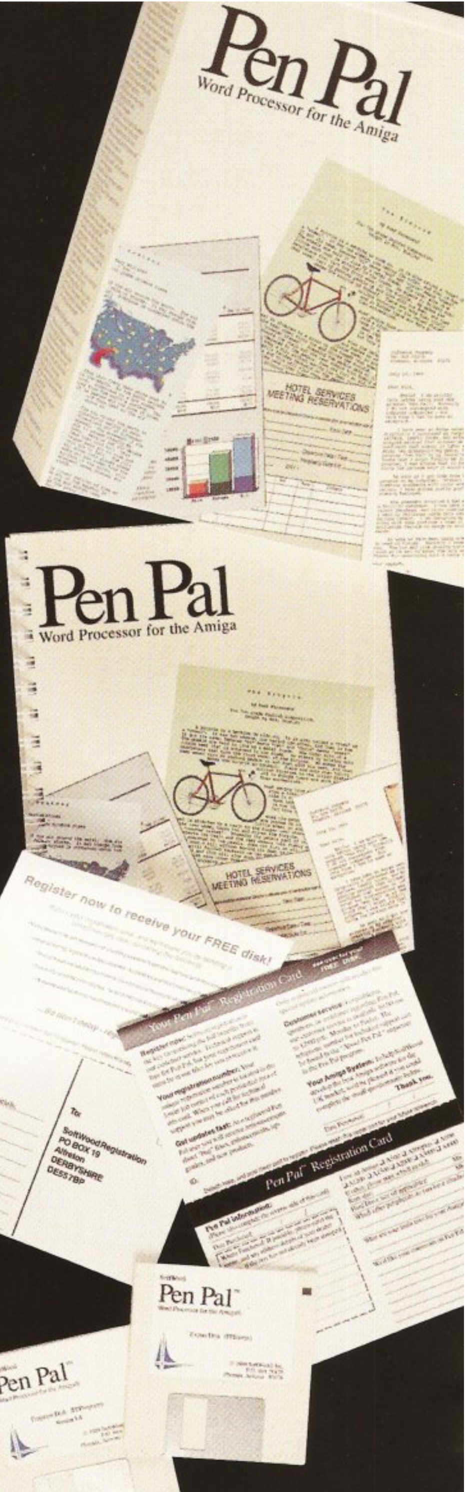


The Best Selling Word Processor and Database just became even better...

VALUE!

Since its launch, Pen Pal has become the most popular package of its type

Not surprising when you consider the extensive features at your fingertips, combined with user friendly simplicity, it was bound to be a winner! In a comprehensive Word Processor test, Amiga Format commented "There is little to fault Pen Pal, it deserves to do well" - quite a prediction it seems! Format have since said that it's "Still the best value for money..." If you're not a Pen Pal user yet, we hope you soon will be, because at just £49.95... the best just became better, even better value!



Pen Pal

A superb package, with immense power, to fulfil all your Word Processing needs, and... with an integrated Database too! It's all so easy to use, you'll rarely need to refer to the extensive 250 page lay-flat spiral bound manual. Users frequently tell us that they've never found a program they get on with so well.

THE WORD PROCESSOR: You can... Open multiple documents simultaneously; search and replace; cut, copy and paste; check your spelling with a 110,000+ word dictionary; import your favourite IFF/HAM graphics, from programs such as DPaint, or Clip Art files in various sizes and colours; automatically flow text around graphics in any Workbench compatible font (there are over 200 available styles) in different sizes and colours to suit your design... Even as you type! Full Page View with position, edit and creation of graphic objects and extremely useful forms designer. All this from a word processor and... Much, Much, More! As you can see from the documents shown on the left, this is no ordinary program!

THE DATABASE: With 32 fields per record, 32,000 records per database and a fast sort of 1000 records in less than 5 seconds, this is a *real* database. Mail merging into the Word processor couldn't be simpler, with easy creation of templates for letters or reports, into which information can be merged.

AND... Remember, Pen Pal comes with full support for the new or experienced user completely free! Friendly help for all registered owners is just a phone call away.

SoftWood - Quality software for your Amiga

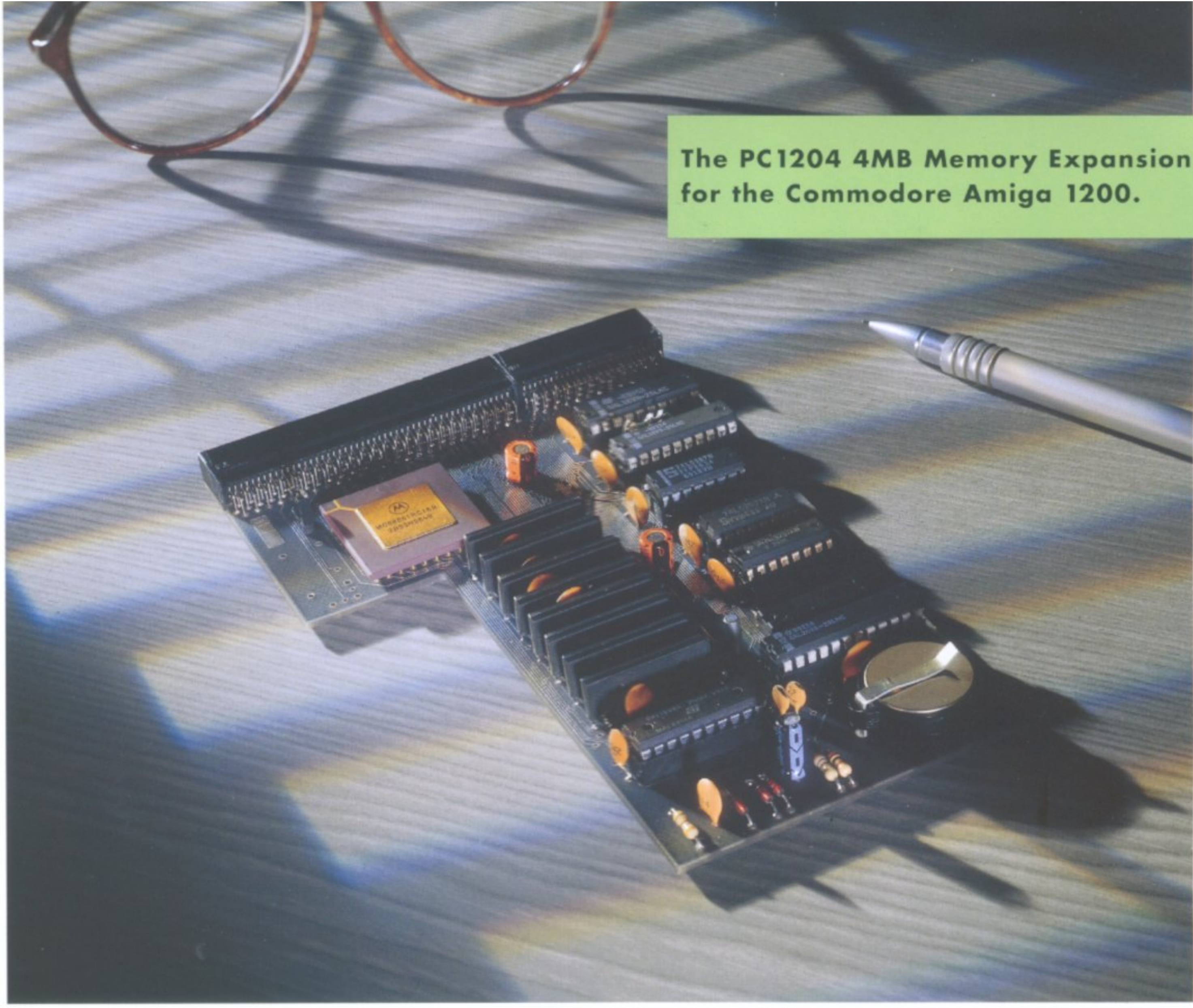
*With Pen Pal you're not just getting a one off product! SoftWood are acknowledged as the World's leading software company who develop **just** for Amiga and **no other** system. Once you're a registered SoftWood product owner your investment is protected as you'll have access to unlimited free technical support [others charge you] and preferential upgrades to other SoftWood titles, both existing and future. Exciting new products are being developed right now. Pen Pal - your first step on the SoftWood ladder of Amiga software*

Pen Pal is available from all good Amiga software Dealers or from SoftWood. Call for your list of stockists.

SoftWood Products Europe
PO Box 19 Alfreton
Derbyshire DE55 7RW England
Tel: 0773 836781 Fax: 0773 831040

Pen Pal is compatible with any Amiga from A500 to the latest A1200/A4000 ranges with a minimum of 1 Mb. available free memory.

MEMORY EXPANSIONS



The PC1204 4MB Memory Expansion for the Commodore Amiga 1200.

Power Computing's innovative 4MB 32-bit memory expansion for the Amiga 1200 is now available. The PC1204 includes these many features:

Zero Wait State- Unlike some other expansions the PC1204 never leaves the processor waiting around for data, which means that your A1200 can run at its maximum speed.

Ultra Fast FPU- An optional maths co-processor speeds up intensive calculations. A 50MHz chip will speed up operations by up to fifty times.

Real-Time Battery Backed Clock- Allows files to be date-stamped with the correct time and date so that you know exactly when they were created.

Low Power- High density RAMs means low power consumption.

Easy To Fit- Fitted in minutes without the need to remove the computer's case.

Optional FPU Disable Switch- Disable the FPU instantly for software that will not run with a maths co-processor installed.

	Power PC1204	A leading competitor
Speed Vs standard A600	4.84 times faster	4.79 times faster
Speed Vs standard A1200	2.19 times faster	2.17 times faster
CPU MIPS	2.96 times faster	2.93 times faster



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All prices include VAT